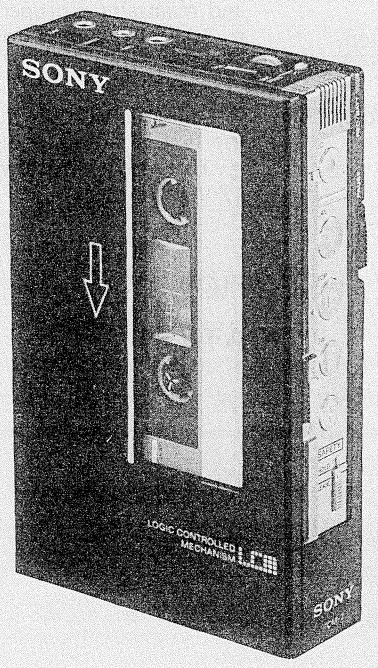
TCM-7

US Model
Canadian Model
AEP Model
UK Model
E Model



(photo: Black Type)

CASSETTE-CORDER

SPECIFICATIONS

Recording System: 2-track 1-channel monaural

Fast winding time: Approx. 2 min. with Sony Cassette C-60

Frequency Response: 100 – 9,000 Hz

Tape Speed: 4.8 cm/sec (1 7/8 ips)
Approx: $^{+30}_{-20}$% adjustable in playback

Speaker: Approx. 4.5 cm (1 13/16 inches) dia.

Power Output: 360 mW (at 10% harmonic distortion)

Input: Microphone input jack (minijack)
sensitivity 0.2 mV (–72 dB)
for low impedance microphone

Output: Earphone jack (minijack)
for earphone from 8-ohm to 300 ohm or load impedance 10 kilohms or higher

Other Jack: Remote control jack

Power Requirements: 3 V dc, 2 batteries size AA
(IEC designation R6)
DC IN 3 V jack accepts;
120 V ac, 60 Hz with supplied Sony AC-39 ac power adaptor (US model)
120 V ac, 60 Hz with optional Sony AC-39 ac power adaptor (Canadian model)
110, 220 or 240 V ac, 50/60 Hz with optional Sony AC-38 ac power adaptor (AEP, UK, E model)
car battery cord (optional)
DCC-127A for use on 12 V car battery

Battery Life: Approx. 3 hours with Sony SUM-3 (NS) New Super batteries or Eveready No. 1215 Heavy Duty batteries and 7 hours with Eveready AM3 alkaline batteries

Dimensions: Approx. 85.8 x 134.5 x 31.5 mm (w/h/d) (3 1/2 x 5 3/8 x 1 1/4 inches)
incl. projecting parts and controls

Weight: Approx. 390 g (14 oz) incl. batteries

0 dB=0.775 V

TAPE TRANSPORT MECHANISM	MT-7-22

MICROFILM

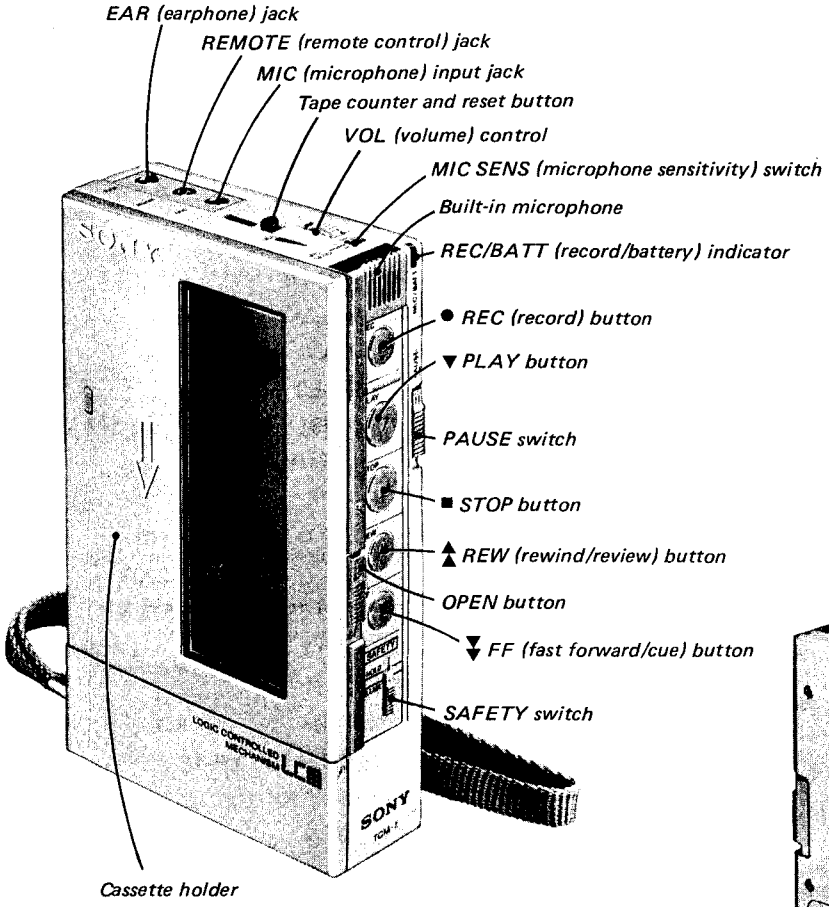
SONY

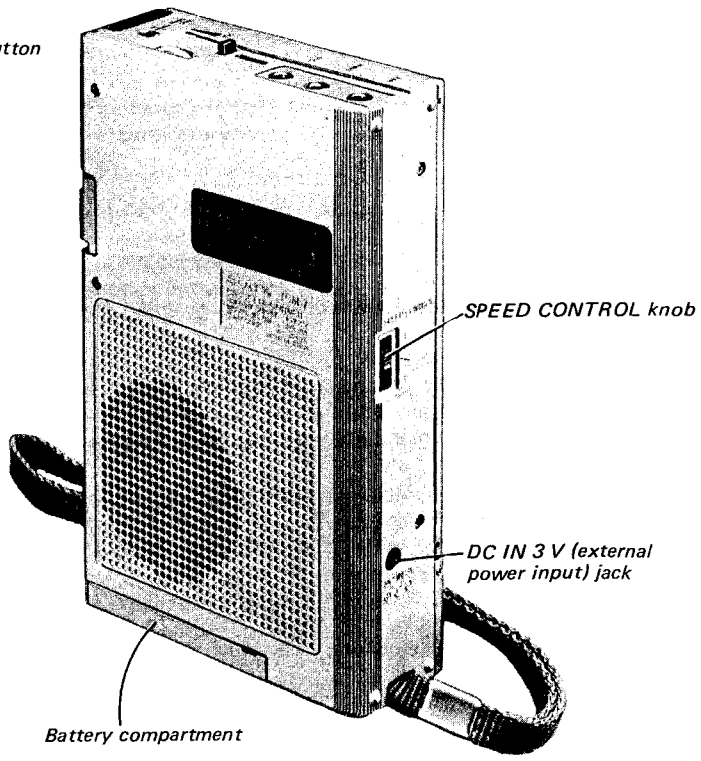
SERVICE MANUAL

FEATURES

- Logic-controlled mechanim allows rapid switching directly from one mode to another.
- Extremely compact size for easy one-hand operation.
- Simplicity of recording-merely insert a cassette and press one button.
- Built-in electret condenser microphone with adjustable sensitivity.
- Adjustable tape speed in playback mode.
- Automatic recording control system automatically adjusts and maintains a proper recording level.
- SAFETY switch for preventing the set from changing to another mode if, by accident, a tape operation button is pressed.
- All-mode shut-off mechanism which activates at the end of the tape in any operating mode.
- Three different power sources: batteries, house current and 12 V car battery.

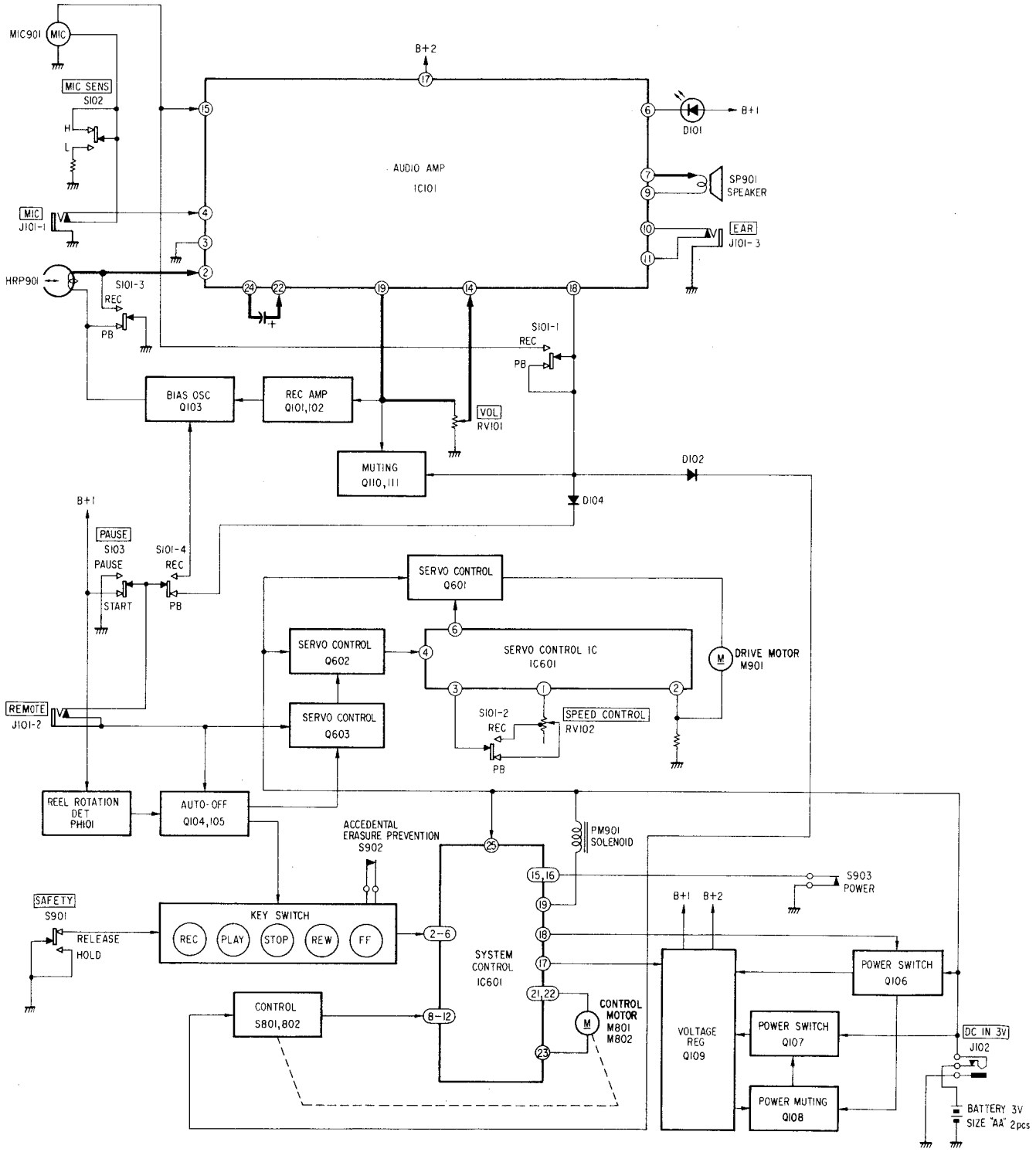
SECTION 1
LOCATION





SECTION 2
OUTLINE

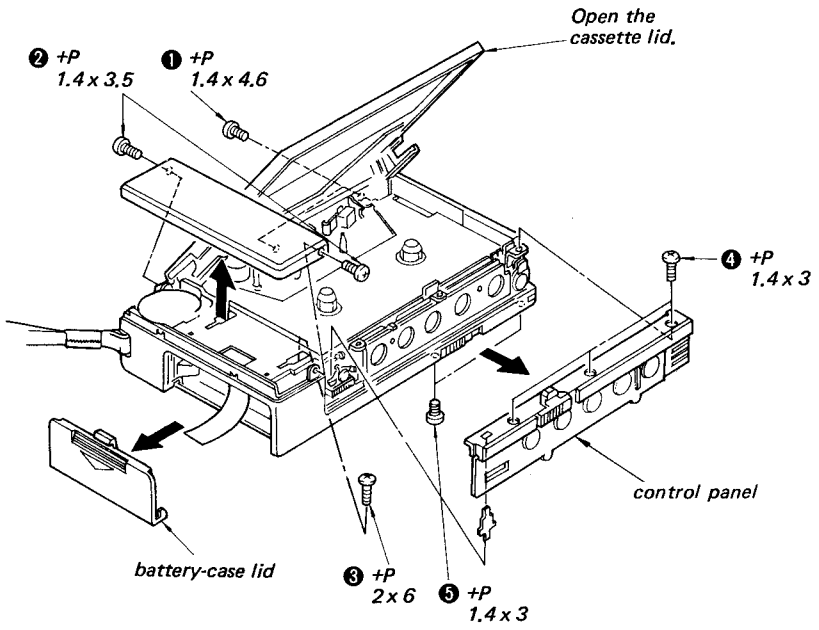
BLOCK DIAGRAM



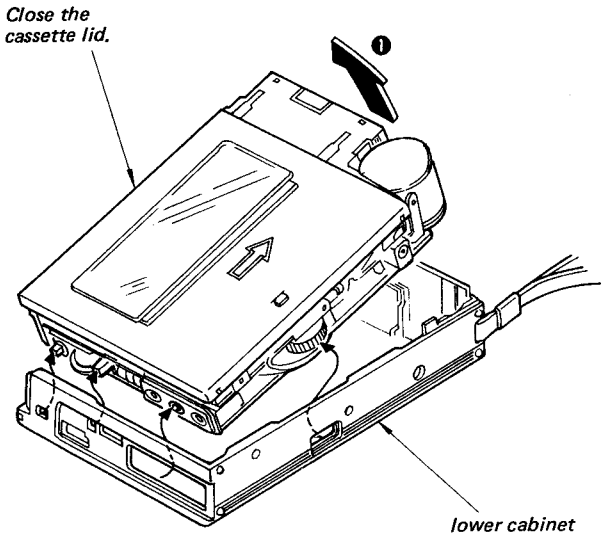
SECTION 3
DISASSEMBLY

Note: Follow the disassembly pricedure in the numerical order given.

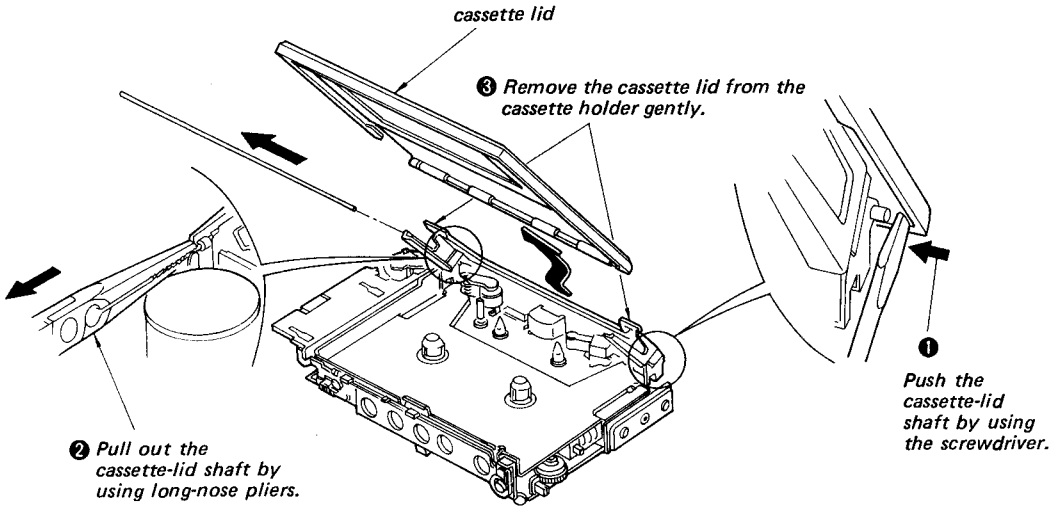
LOWER CABINET, CONTROL PANEL REMOVAL



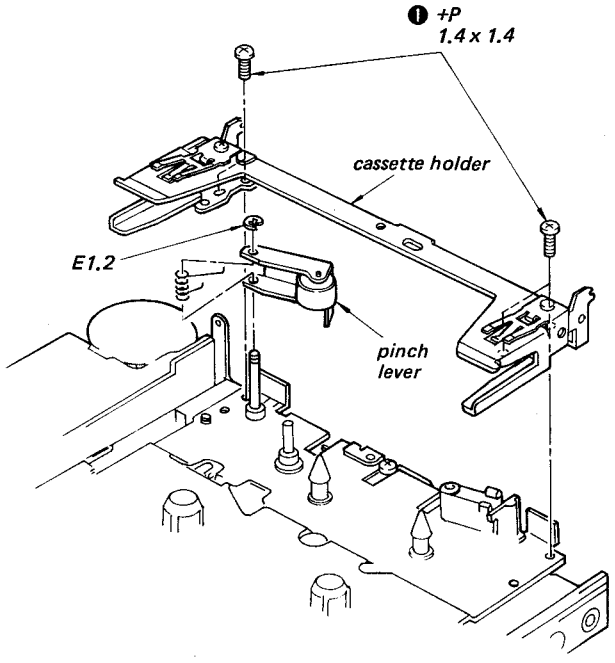
LOWER CABINET REMOVAL



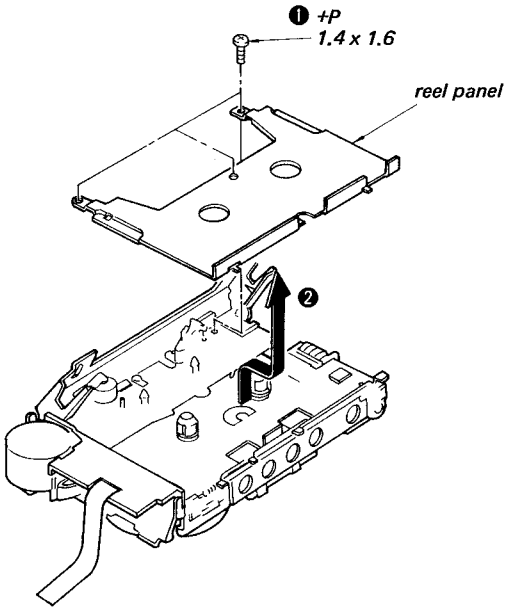
CASSETTE LID REMOVAL


cassette lid
❸ Remove the cassette lid from the cassette holder gently.
❶ Push the cassette-lid shaft by using the screwdriver.
❷ Pull out the cassette-lid shaft by using long-nose pliers.

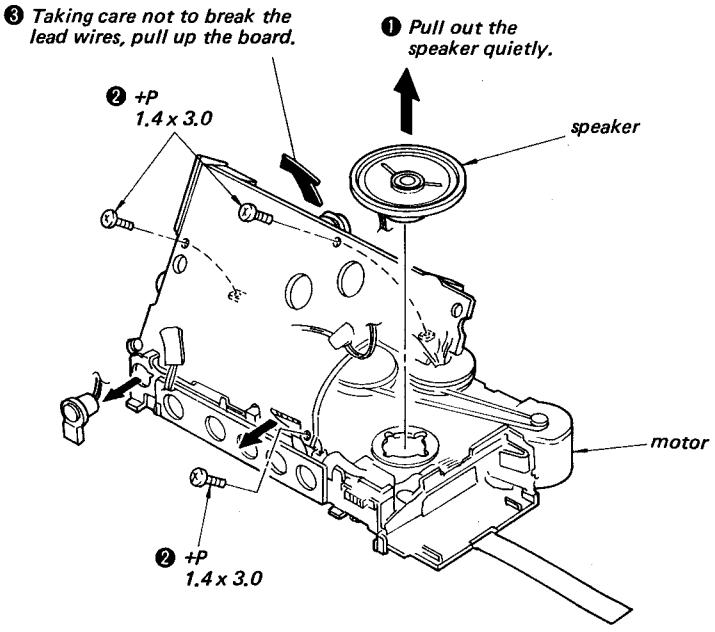
CASSETTE HOLDER, PINCH LEVER REMOVAL



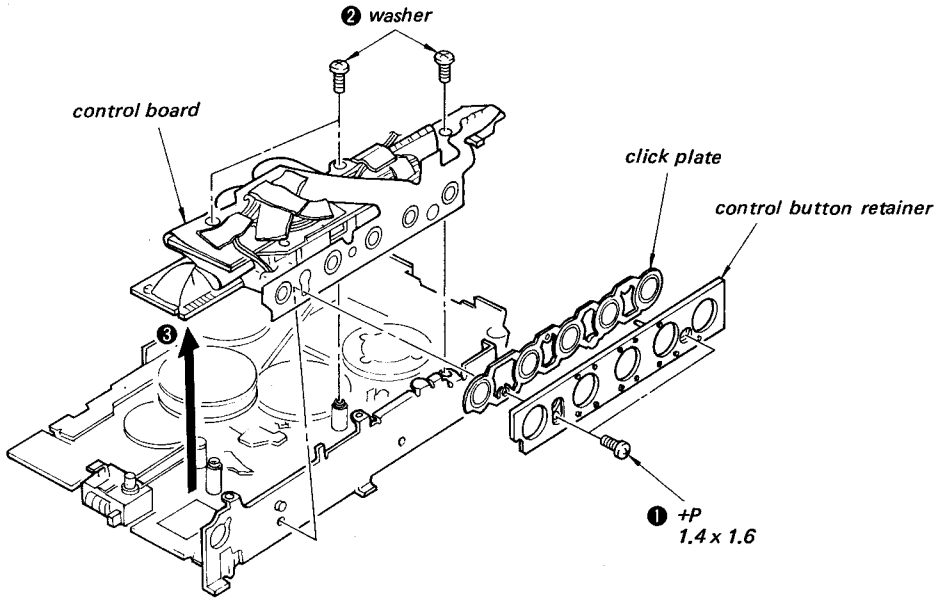
REEL PANEL REMOVAL



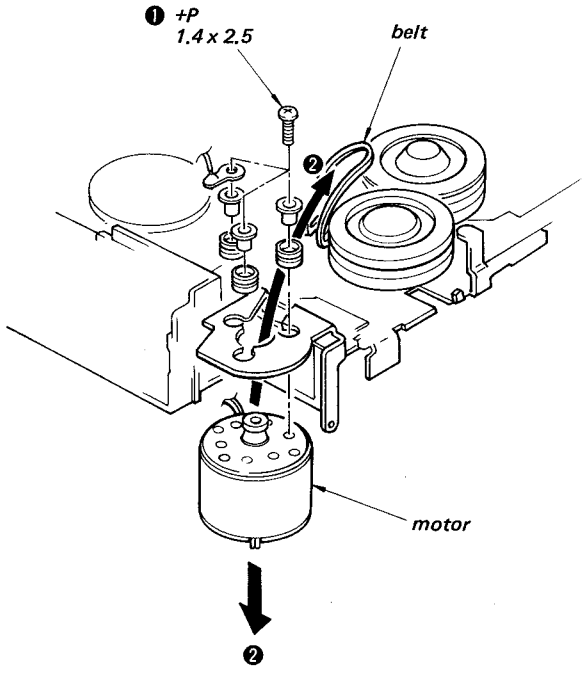
AUDIO BOARD REMOVAL



CONTROL BOARD REMOVAL



MOTOR REMOVAL



SECTION 4
ADJUSTMENTS

4-1. MECHANICAL ADJUSTMENTS AND MEASUREMENT

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:

record/playback head	pinch roller
erase head	rubber belts
capstan	idlers

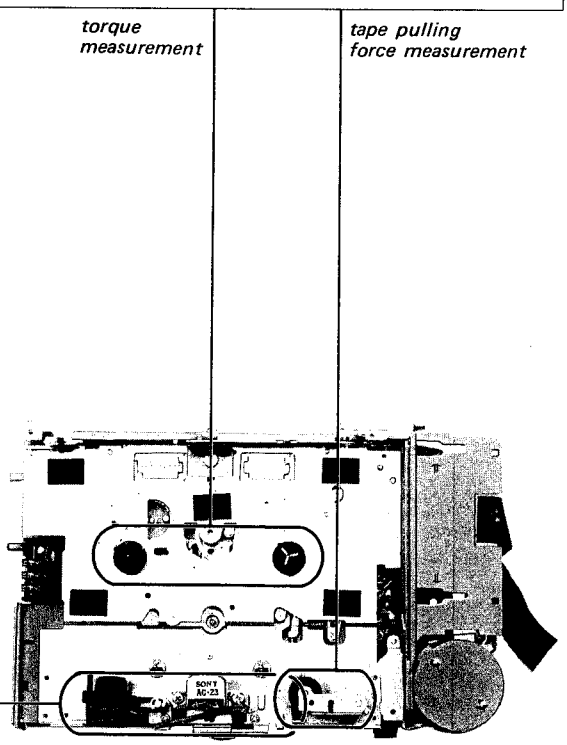
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Torque Measurement

Torque	Torque meter	Meter reading
Forward	CQ-102B	26 – 36 g•cm (0.36 – 0.50 oz•inch)
Fast Forward	CQ-201A	More than 85 g•cm (More than 1.18 oz•inch)
Rewind	CQ-201A	More than 75 g•cm (More than 1.04 oz•inch)
Back Tension	CQ-102B	2.5 – 4 g•cm

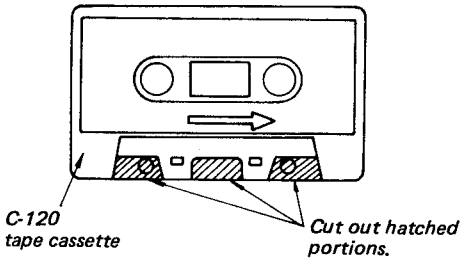
Tape Pulling Force Measurement

Meter	Meter Reading
CQ-403	150 g ± 30 g (4.23 – 6.34 oz)

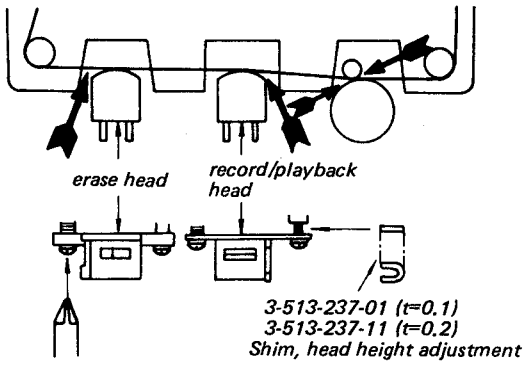


Head Height Adjustment

1. Prepare an adjustment cassette as shown below.

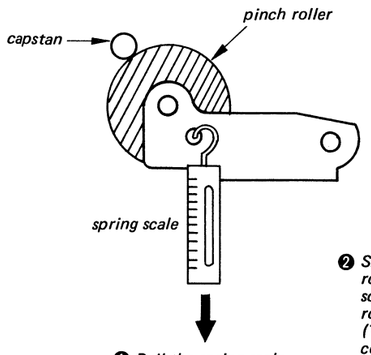


2. In record mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at portions shown by arrows.

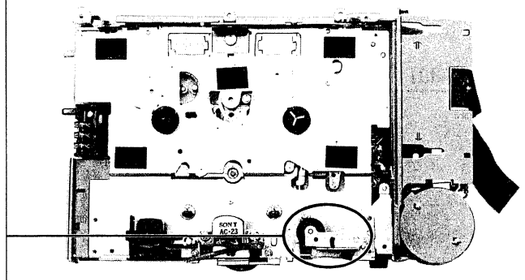


Pinch Roller Pressure Measurement

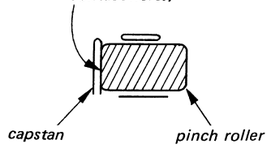
– Playback Mode –



Specification:
120 – 180 g
(4.23 – 6.35 oz)

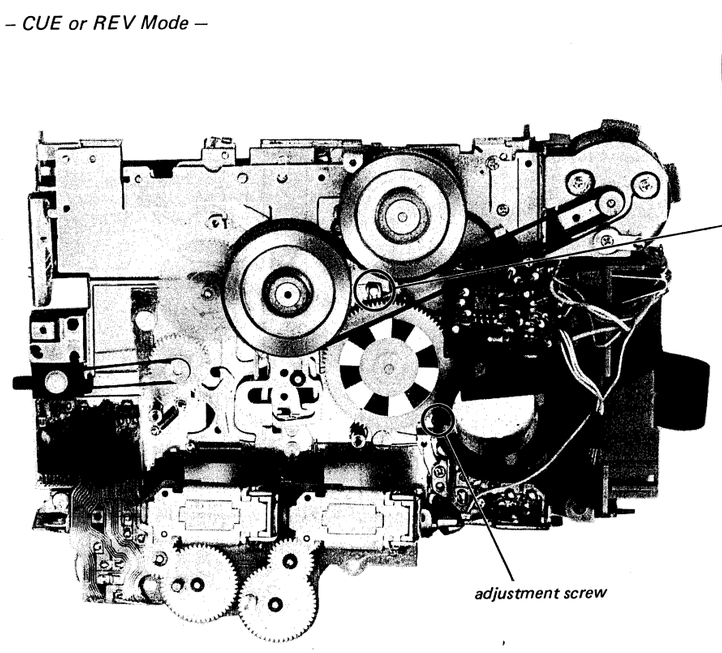


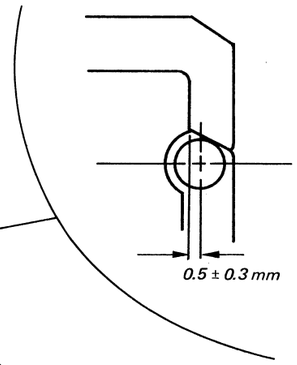
❷ *Slowly return the pinch roller and read the spring scale just when the pinch roller starts rotating. (The capstan should first contact here.)*



Solenoid Position Adjustment

– CUE or REV Mode –





Adjust the screw for the specified clearance.

4-2. ELECTRICAL ADJUSTMENTS

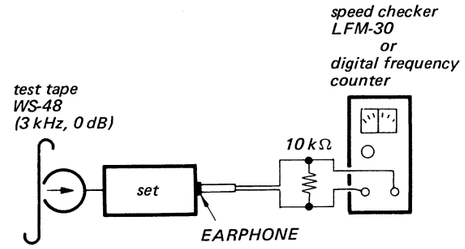
Tape Speed Adjustment

Setting:

VOLUME control: mechanical mid
SPEED control: mechanical mid

Procedure:

Mode: playback

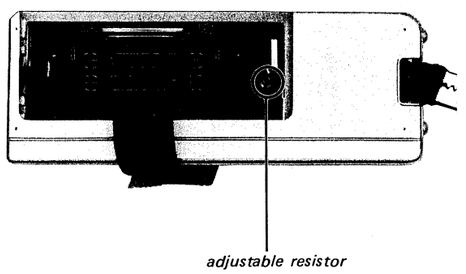


Specification:

Speed checker	Digital frequency counter
–3 to +2%	2,910 – 3,060 Hz

Frequency difference between the beginning and the end of the tape should be within 1% (30 Hz).

Adjustment Location:



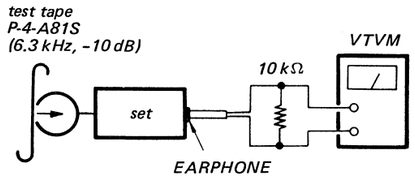
Record/playback Head Azimuth Adjustment

Setting:

VOLUME control: mechanical mid
SPEED control: mechanical mid

Procedure:

1. Mode: playback

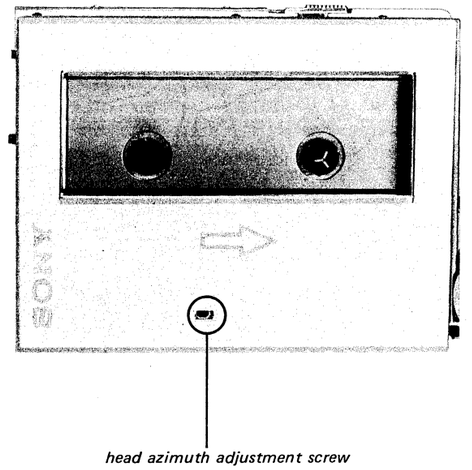


2. Turn the adjustment screw to obtain the maximum reading on VTVM.

   Note: Several peaks may appear, but take the maximum.

3. After the adjustment, lock the adjustment screw with suitable locking compound.

Adjustment Location:



4-2. ELECTRICAL ADJUSTMENTS

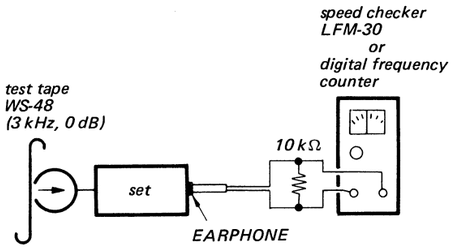
Tape Speed Adjustment

Setting:

VOLUME control: mechanical mid
SPEED control: mechanical mid

Procedure:

Mode: playback

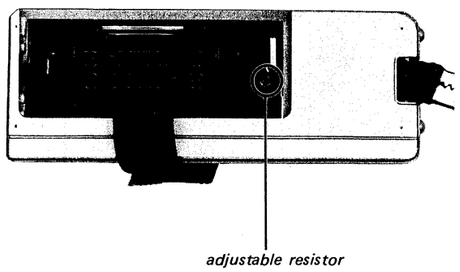


Specification:

Speed checker	Digital frequency counter
-3 to +2%	2,910 – 3,060 Hz

Frequency difference between the beginning and the end of the tape should be within 1% (30 Hz).

Adjustment Location:



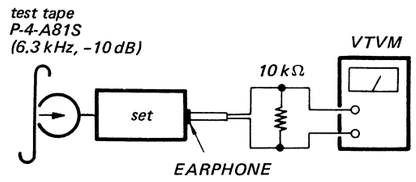
Record/playback Head Azimuth Adjustment

Setting:

VOLUME control: mechanical mid
SPEED control: mechanical mid

Procedure:

1. Mode: playback

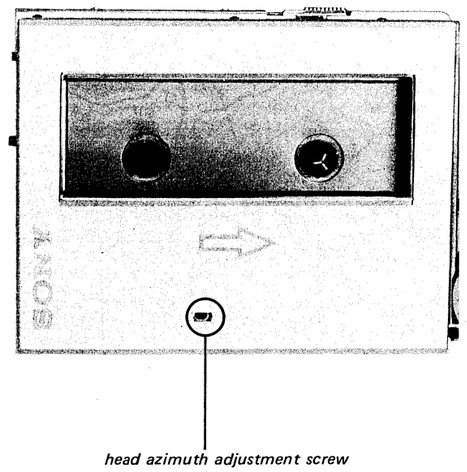


2. Turn the adjustment screw to obtain the maximum reading on VTVM.

   Note: Several peaks may appear, but take the maximum.

3. After the adjustment, lock the adjustment screw with suitable locking compound.

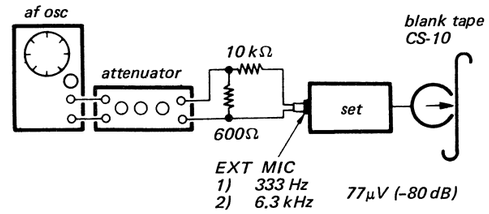
Adjustment Location:



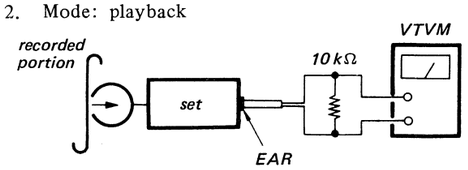
Record Bias Adjustment

Procedure:

1. Mode: record

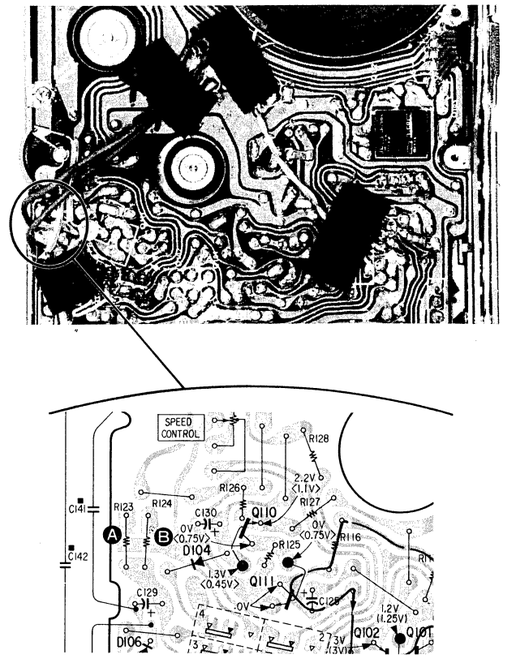


2. Mode: playback



1. Play back the 330 Hz signal.
2. Adjust the VOL control for -20 dB (77.5 mV) reading on VTVM.
3. Change the pattern connection (Ⓐ or Ⓑ) so that the output level of 6.3 kHz signal is within 6 dB relative to that of 333 Hz signal.

Adjustment Location: Audio Board

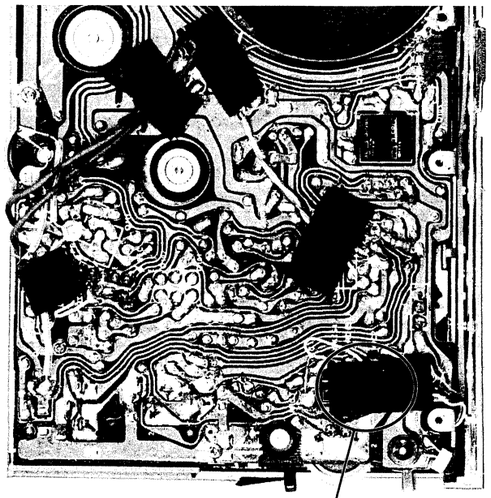


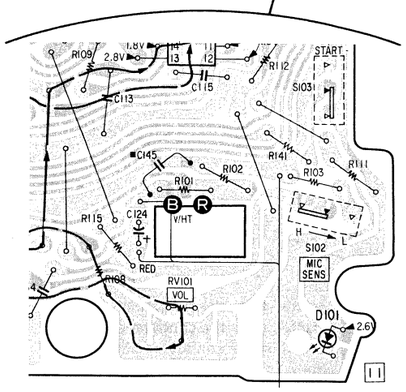
Microphone Sensitivity Adjustment

When replacing the microphone, perform this adjustment.

Mark of Microphone	Pattern Connection
BLACK	Ⓑ
RED	Ⓡ

Adjustment Location: Audio Board
(Conductor Side)





TCM-7 TCM-7

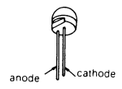
A B C D E F G

1 2 3 4 5

5-1. MOUNTING DIAGRAM

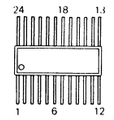
- **Semiconductor Lead Layouts**

SLP24B



1S1555

CX807

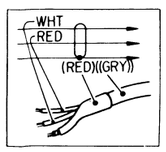


2SA1048-Y
2SC536SP
2SC2458-Y

2SA772-23

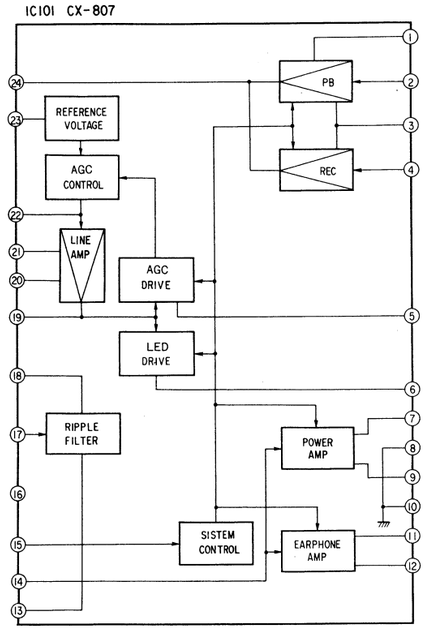
Note:

- Color code of sleeving over the end of the jacket.

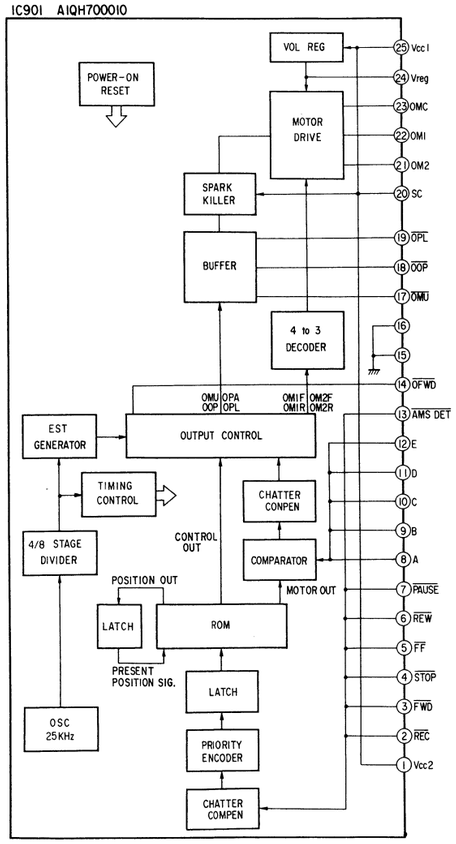


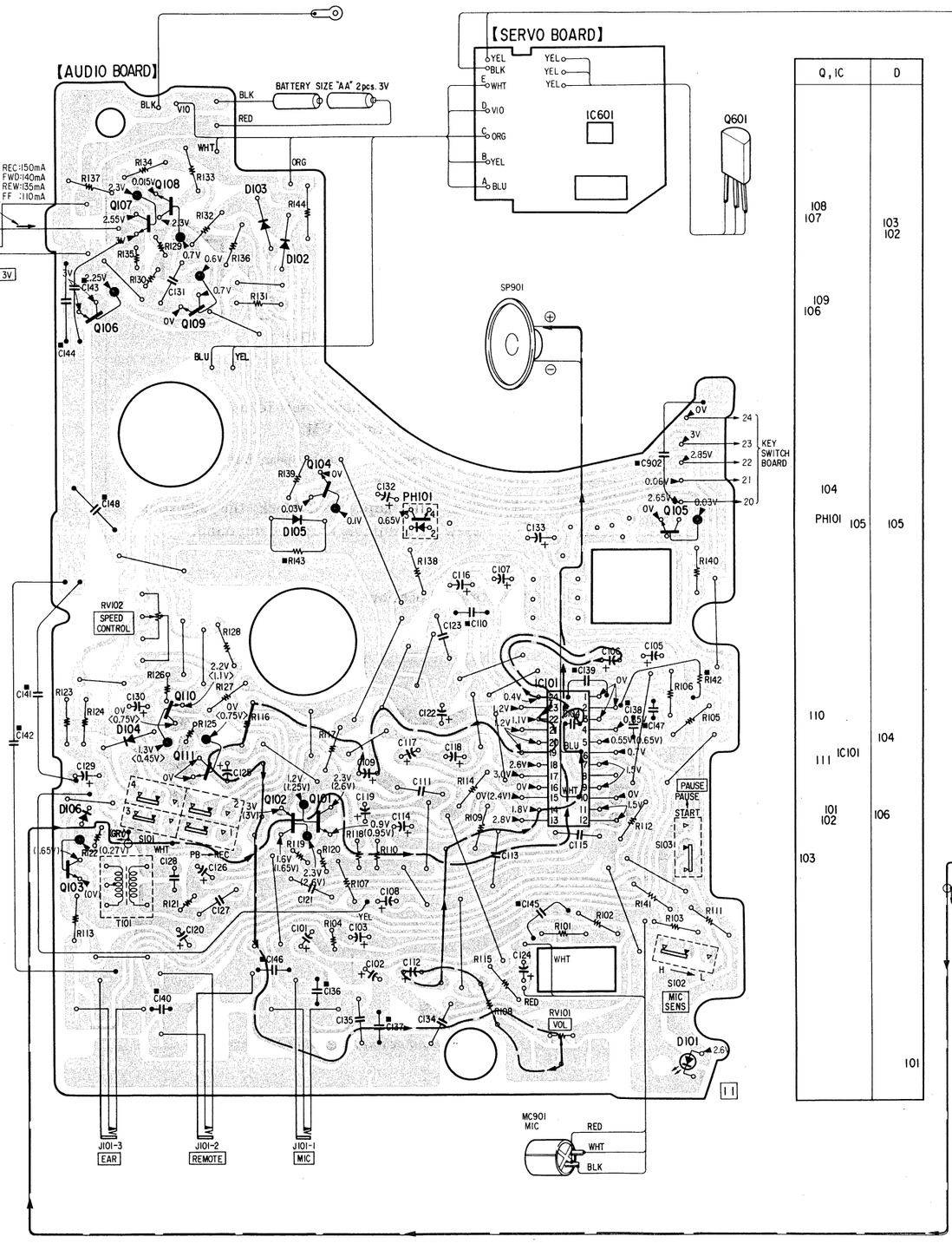
- ○— : parts extracted from the component side.
- ●— : parts extracted from the conductor side.
- ■ : part mounted on the conductor side.
- ▒ : B + pattern
- ▬▶ : signal path
- ▬▪▶ : L-CH signal path
- ▬▪▶ : R-CH signal path

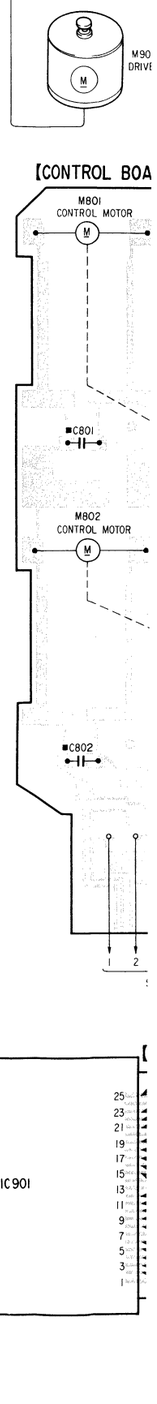
IC101 CX-807



IC901 AIQH700010

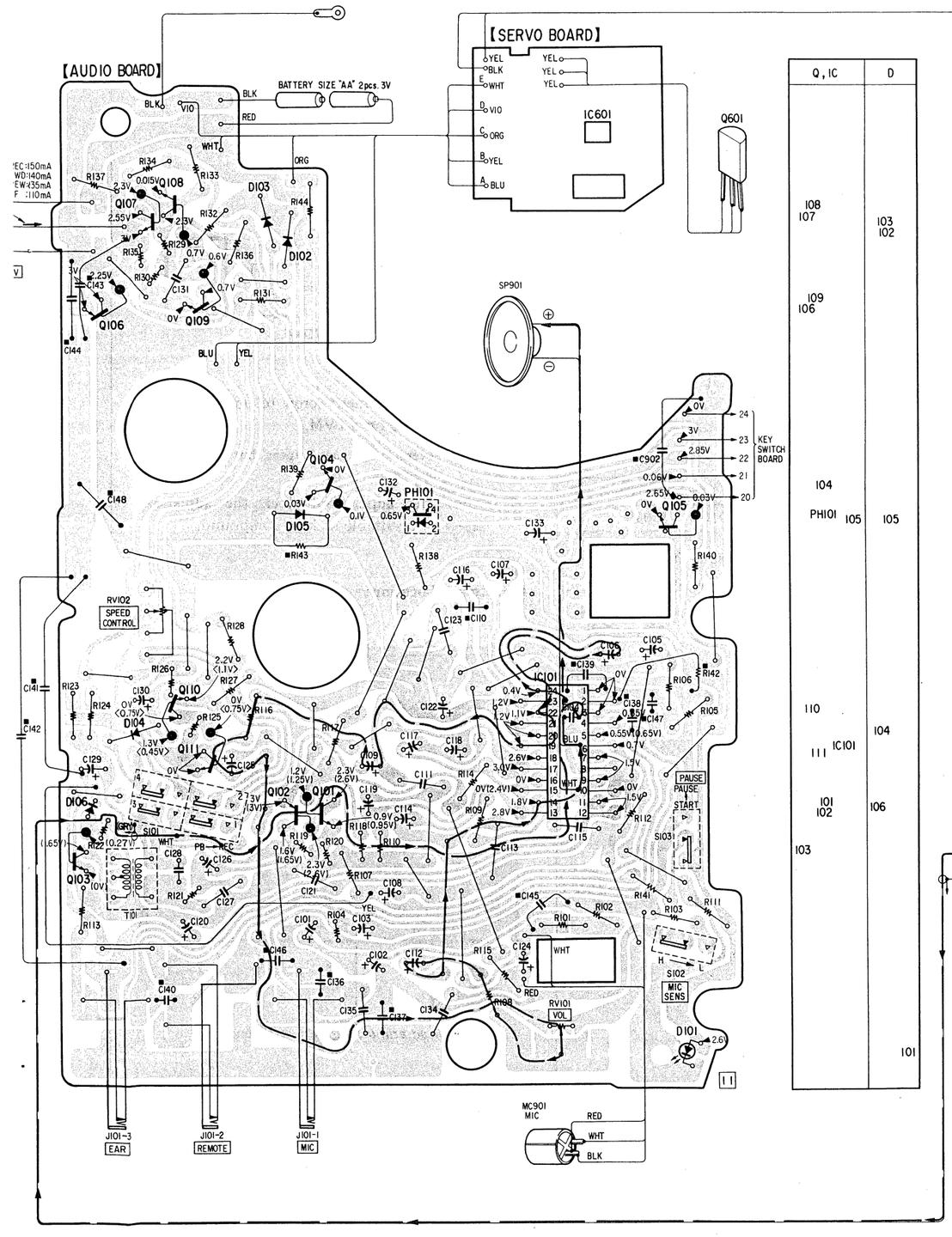




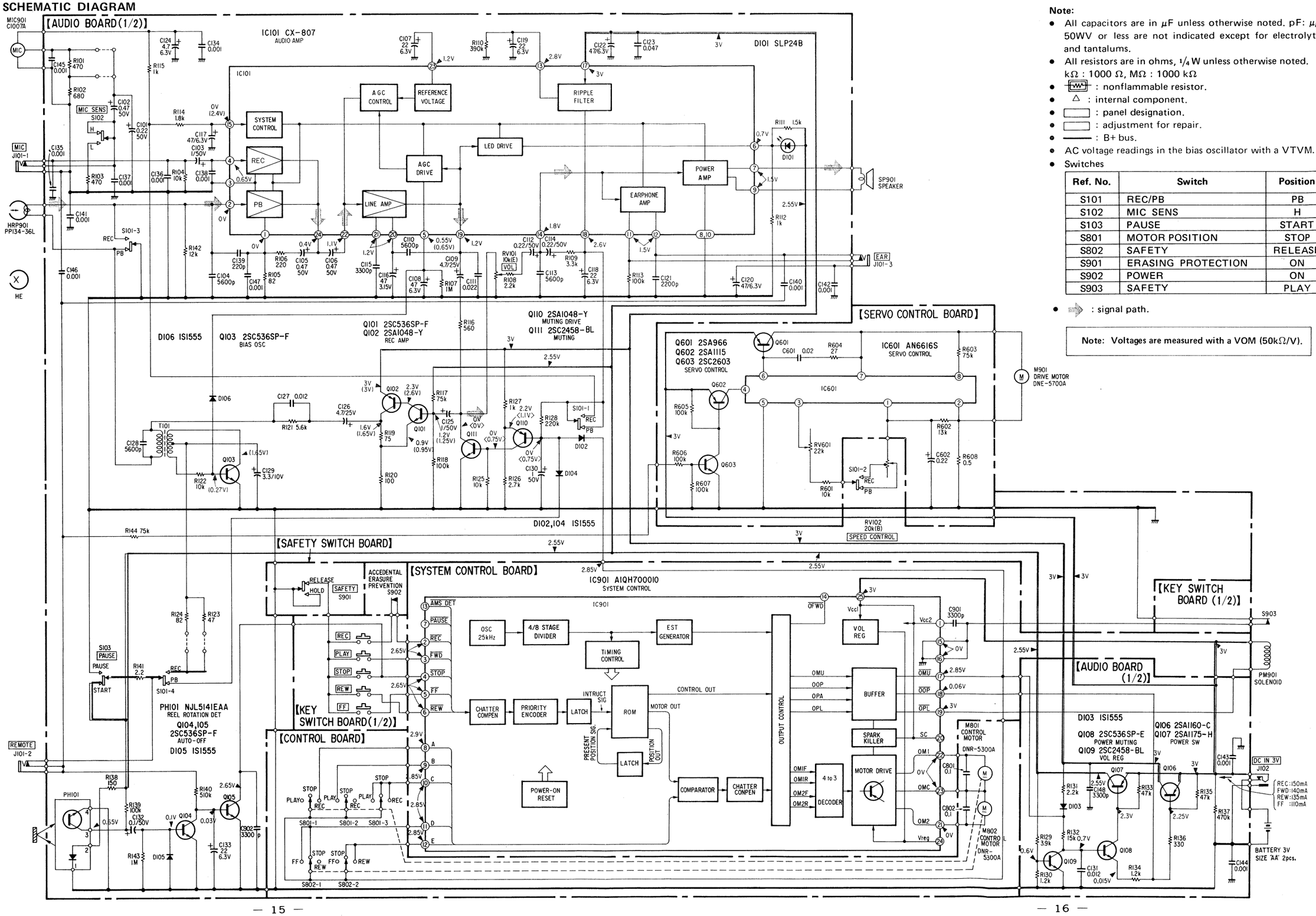


C D E F G H I J

1 2 3 4 5



5-2. SCHEMATIC DIAGRAM



Note:

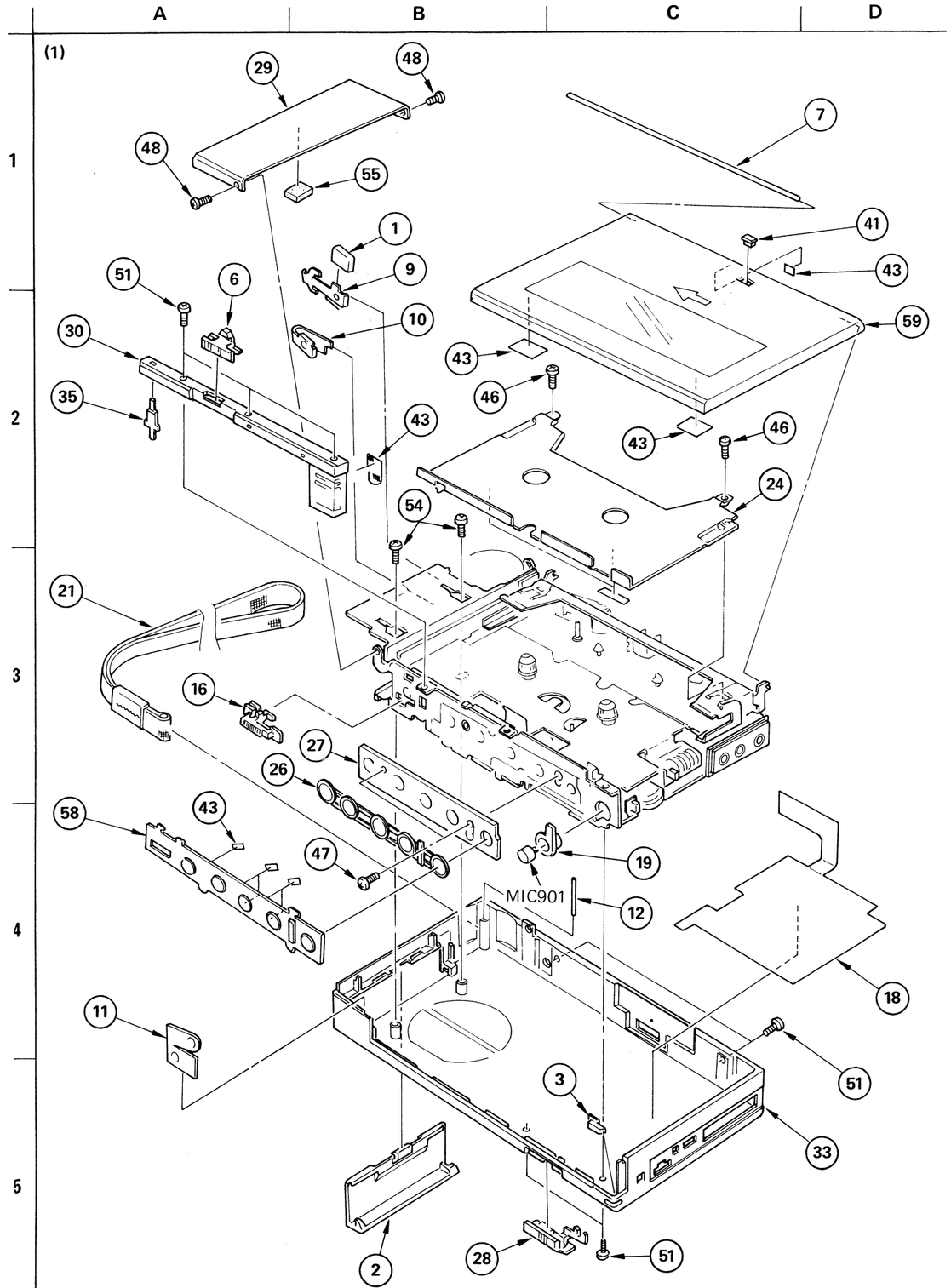
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4 W unless otherwise noted. kΩ : 1000 Ω, MΩ : 1000 kΩ
- : nonflammable resistor.
- △ : internal component.
- : panel designation.
- : adjustment for repair.
- ——— : B+ bus.
- AC voltage readings in the bias oscillator with a VTVM.
- Switches

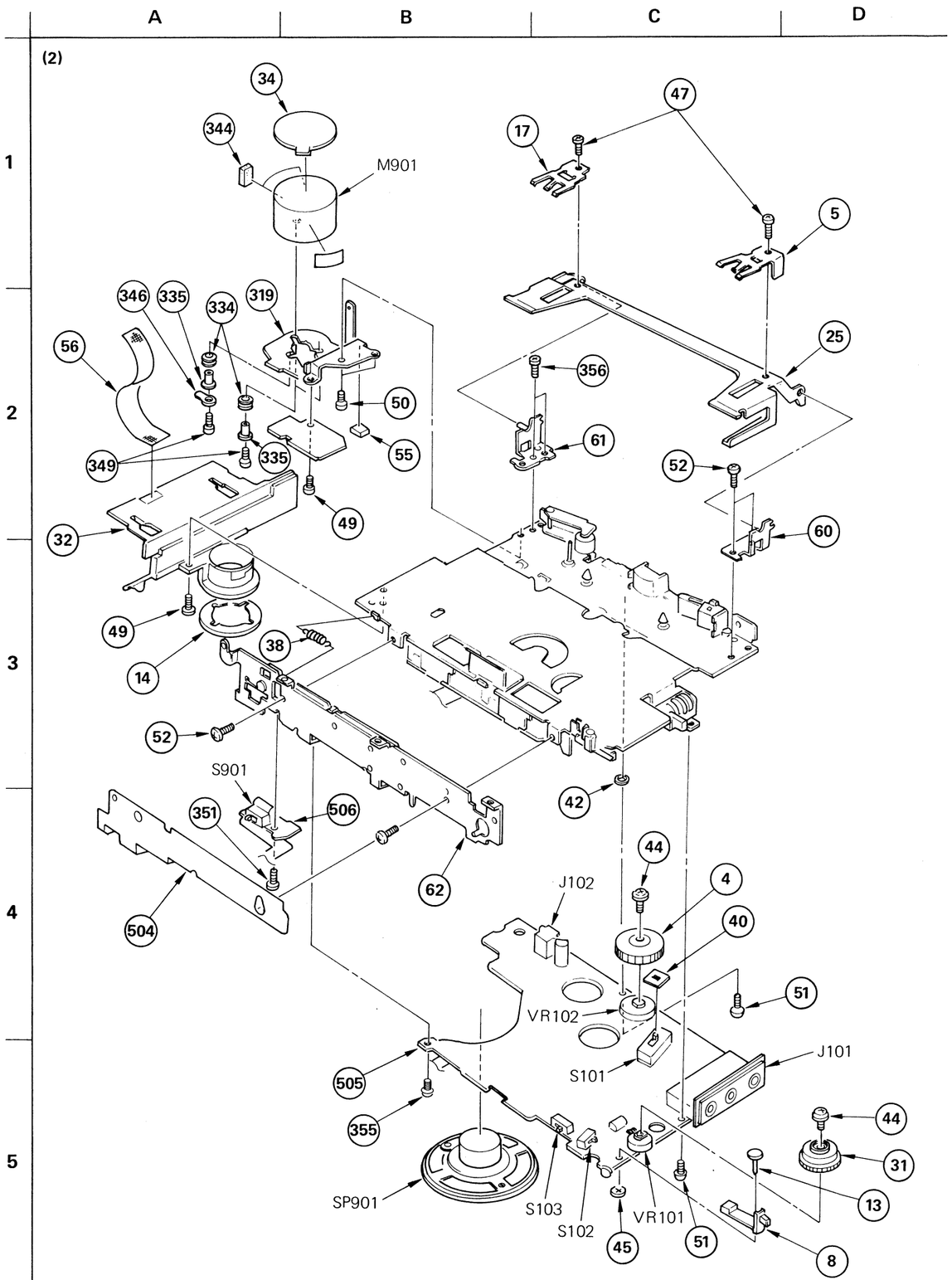
Ref. No.	Switch	Position
S101	REC/PB	PB
S102	MIC SENS	H
S103	PAUSE	START
S801	MOTOR POSITION	STOP
S802	SAFETY	RELEASE
S901	ERASING PROTECTION	ON
S902	POWER	ON
S903	SAFETY	PLAY

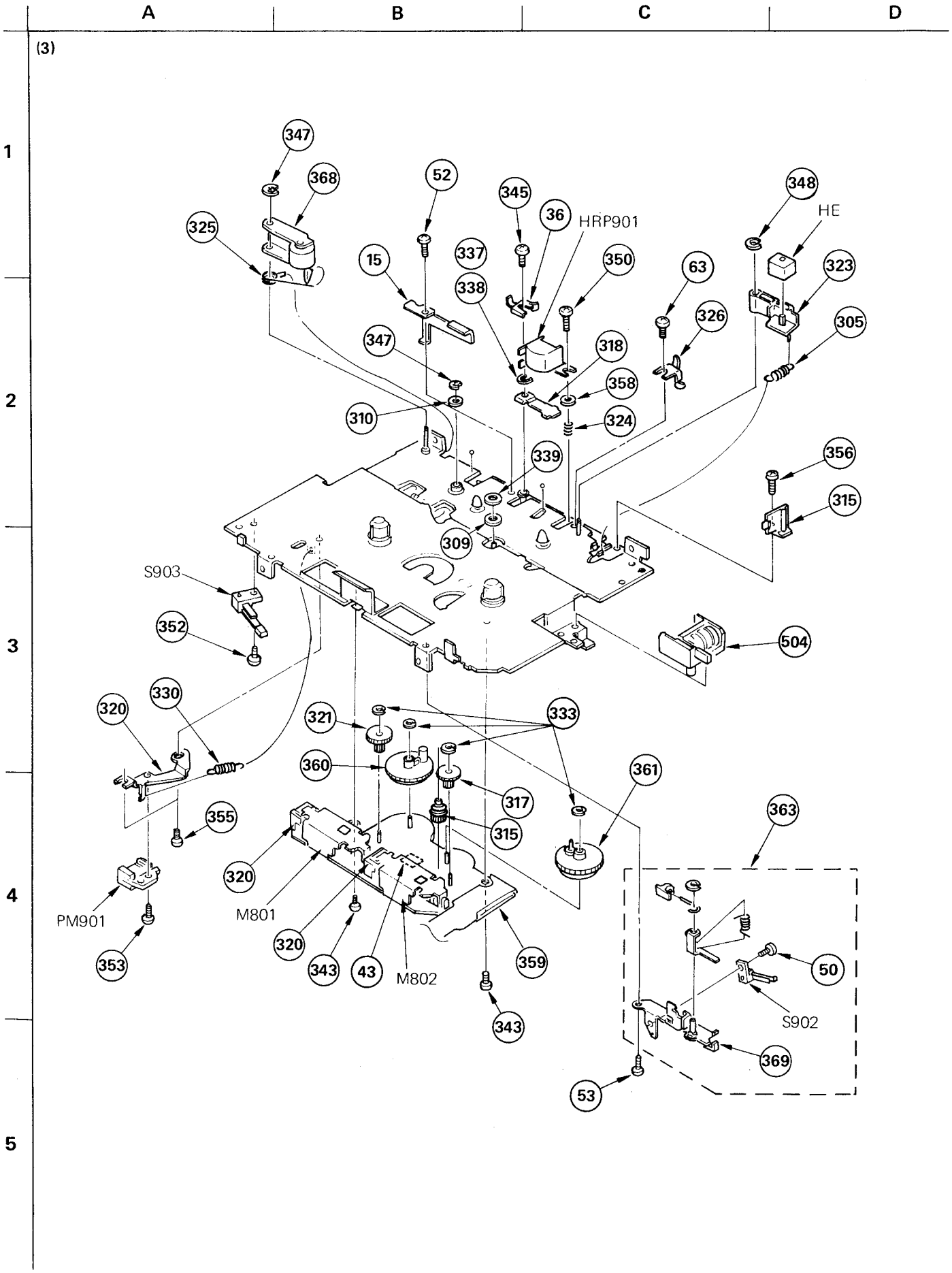
- : signal path.

Note: Voltages are measured with a VOM (50kΩ/V).

SECTION 6
EXPLODED VIEWS AND PARTS LIST



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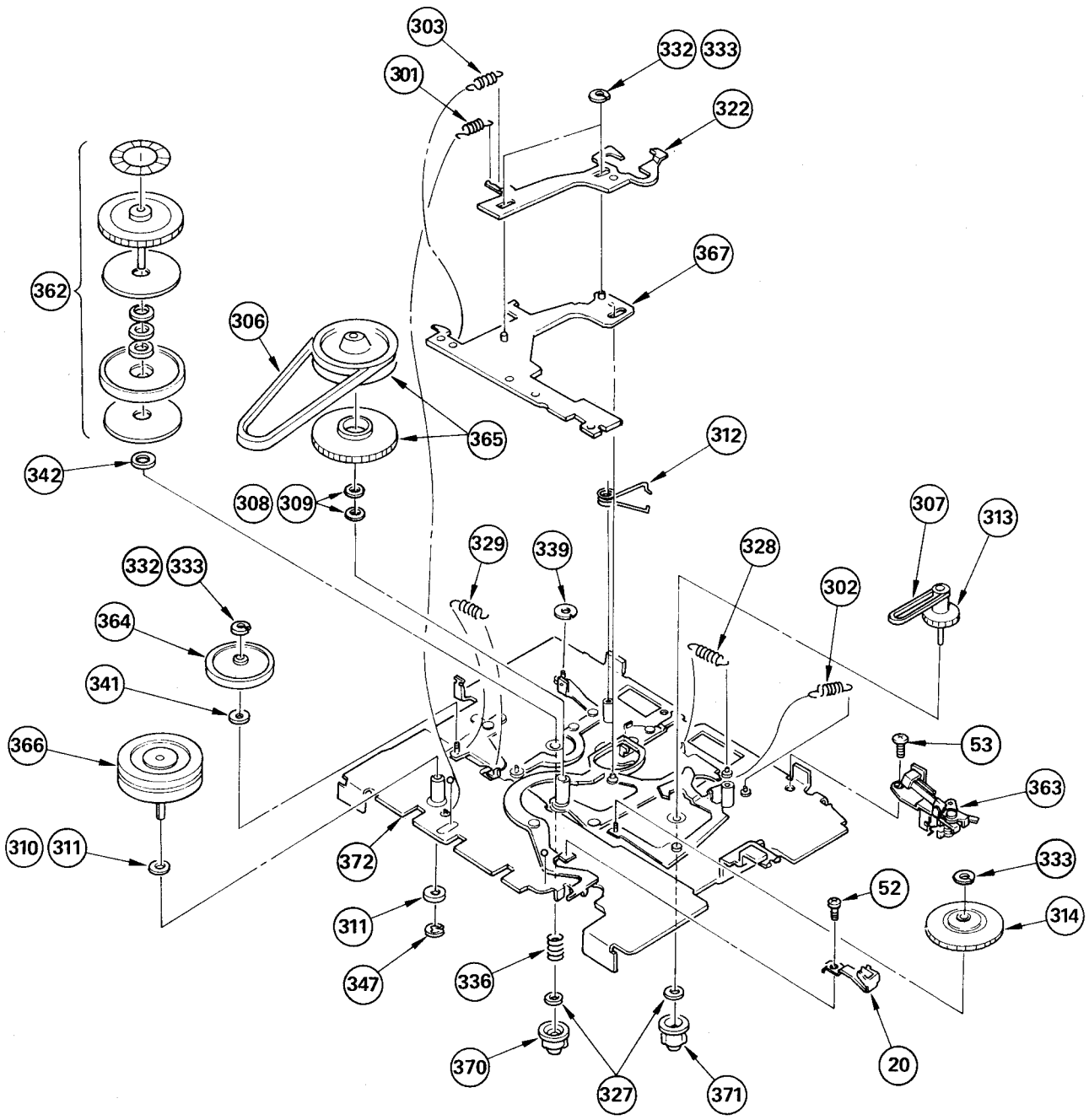
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GENERAL SECTION

No.	Part No.	Description
1 ♦	3-308-401-00	RETAINER, BATTERY
2	3-308-404-00	(BLACK)....LID, BATTERY CASE
2	3-308-404-01	(SILVER)...LID, BATTERY CASE
3	3-308-405-00	WINDOW, LED
4	3-308-406-00	KNOB, SPEED CONTROL
5	3-308-409-00	SPRING (A)
6	3-308-410-11	(BLACK)... KNOB, EJECT
6	3-308-410-00	(SILVER)... KNOB, EJECT
7	3-308-411-00	SHAFT, LID, CASSETTE
8	3-308-413-00	KNOB, MICROPHONE SENSITIVITY
9	3-308-414-00	PIECE (A), CONTACT, BATTERY
10	3-308-415-00	PIECE (B), CONTACT, BATTERY
11	3-308-416-00	PIECE (C), CONTACT, BATTERY
12 ♦	3-308-417-00	SHAFT, STRAP
13 ♦	3-308-418-00	SHAFT, KNOB, MIC SENSITIVITY
14	3-308-419-00	CUSHION, SPEAKER
15 ♦	3-308-420-00	STOPPER, PC BOARD
16	3-308-421-00	KNOB, SAFETY
17	3-308-422-00	SPRING (B)
18 ♦	3-308-424-00	PAPER, SHIELD
19	3-308-425-00	CUSHION, MICROPHONE
20	3-308-427-00	SPRING
21	3-308-428-00	STRAP
22 ♦	3-308-430-00	RETAINER, REFLECTOR, PHOTO
23 ♦	3-308-431-00	SHEET, INSULATING
24	3-308-432-00	PANEL, REEL
25	3-308-434-00	HOLDER, CASSETTE
26	3-308-436-00	PLATE, CLICK
27 ♦	3-308-438-00	RETAINER, BUTTON, CONTROL
28	3-308-440-00	(BLACK)....KNOB, PAUSE
28	3-308-440-01	(SILVER)...KNOB, PAUSE
29	3-308-441-00	(SILVER)... PANEL
29	3-308-441-11	(BLACK)... PANEL
30	3-308-442-00	(SILVER)... STRIP, ORNAMENTAL
30	3-308-442-11	(BLACK)... STRIP, ORNAMENTAL
31	3-308-443-00	KNOB, CONTROL
32	3-308-446-00	CASE, BATTERY
33	3-308-447-00	(SILVER)...CABINET (LOWER)
33	3-308-447-11	(BLACK)....CABINET (LOWER)
34 ♦	3-308-546-00	PLATE, SHIELD, MOTOR
35	3-308-547-00	KNOB, DETECTION
36 ♦	3-308-551-00	RETAINER (B), HEAD LEAD
37	3-527-213-00	(Canadian,AEP,UK,E)..LABEL, SERIAL NUMBER
38	3-570-590-00	SPRING, TENSION
39	3-570-611-00	SHEET, PROTECTION, LID
40	3-570-921-00	SPACER, SWITCH

GENERAL SECTION

No.	Part No.	Description
41	3-579-767-00	(SILVER)...ORNAMENT, HOLE, ADJUSTMENT
41	3-579-767-11	(BLACK)....ORNAMENT, HOLE, ADJUSTMENT
42	3-701-437-11	WASHER
43	3-831-441-XX	CUSHION
44	3-880-990-00	SCREW (1.7X3), FLAT, (+) SPECIAL
45	7-624-200-00	PUSH NUT 1.5
46	7-627-551-07	SCREW, PRECISION +P 1.4X1.6
47	7-627-551-47	SCREW, PRECISION +P 1.4X1.4
48	7-627-551-67	(SILVER)...SCREW, PRECISION +P 1.4X3.5
48	7-627-551-68	(BLACK)....SCREW, PRECISION +P 1.4X3.5
49	7-627-850-07	SCREW, PRECISION +P 1.4X2
50	7-627-850-17	SCREW, PRECISION +P 1.4X2.5
51	7-627-850-27	(SILVER)...SCREW, PRECISION +P 1.4X3
51	7-627-850-28	(BLACK)....SCREW, PRECISION +P 1.4X3
52	7-627-850-47	(SILVER)...SCREW, PRECISION +P 1.4X1.6
52	7-627-850-48	(BLACK)....SCREW, PRECISION +P 1.4X1.6
53	7-627-850-37	SCREW, PRECISION +P 1.4X1.4
54	7-685-104-21	SCREW +P 2X6 TYPE2 SLIT
55	9-911-815-01	CUSHION
56	9-911-816-01	RIBBON, BATTERY
57	9-911-840-XX	STOPPER
58	A-3019-036-A	ORNAMENT ASSY, CONTROL BUTTON
59	X-3308-420-1	(BLACK)... LID ASSY, CASSETTE
59	X-3308-421-1	(SILVER)... LID ASSY, CASSETTE
60 ♦	X-3308-401-0	PLATE (A) ASSY, BEARING
61 ♦	X-3308-402-0	PLATE (B) ASSY, BEARING
62 ♦	X-3308-403-0	PLATE ASSY, CONTROL

ACCESSORY & PACKING MATERIAL

No.	Part No.	Description
101	3-308-445-00	CASE, CARRYING
102	3-308-535-00	SPACER
103	3-308-537-00	CUSHION
104	3-308-540-00	(US,Canadian)...CARTON, ADAPTER
105	3-308-542-00	(US,Canadian)...INDIVIDUAL CARTON
106	3-527-213-02	(AEP,UK,E,Canadian)..LABEL, SERIAL NUMBER
106	3-701-999-00	(US).....LABEL, SERIAL NUMBER
107	3-570-631-71	BAG, POLYETHYLENE
108	3-701-308-00	LABEL, PRODUCT COLOR
109	3-701-309-00	LABEL, PRODUCT COLOR
110	3-701-624-00	BAG, POLYETHYLENE
111	3-773-099-11	MANUAL, INSTRUCTION
112	3-793-828-11	QUESTIONNAIRE
113	8-893-527-00	TAPE, DEMO (CD-814)

MECHANISM SECTION

No.	Part No.	Description
301	2-270-832-00	SPRING, TENSION
302 ♦	3-308-426-00	CLAMP, LEAD, HEAD
303	3-308-450-00	SPRING, TENSION
304	3-308-451-00	SPRING, TENSION
305	3-308-452-00	SPRING, TENSION
306	3-308-460-00	BELT, CAPSTAN
307	3-308-463-00	BELT, COUNTER
308	3-308-471-01	WASHER (FR)
309	3-308-471-11	WASHER (FR)
310	3-308-472-01	WASHER (C) (t=0.25)
311	3-308-472-11	WASHER (C) (t=0.25)
312	3-308-475-00	SPRING
313	3-308-479-00	GEAR, S
314	3-308-486-00	GEAR, REW
315	3-308-500-00	GUIDE, TAPE
316	3-308-502-00	WHEEL, WORM
317	3-308-503-00	GEAR (B), FR-C
318	3-308-505-00	SPRING
319 ♦	3-308-513-00	BRACKET, MOTOR
320 ♦	3-308-515-00	BRACKET, PL
321	3-308-523-00	GEAR (C), FWD-C
322 ♦	3-308-525-00	LIMITER, HEAD CHASSIS
323	3-308-527-00	LEVER, ERASE HEAD
324	3-308-534-00	SPRING, COMPRESSION
325	3-308-544-00	SPRING (B)
326	3-308-551-00	RETAINER (B), HEAD LEAD
327	3-533-073-00	WASHER
328	3-545-588-00	SPRING, TENSION
329	3-547-668-00	SPRING, TENSION
330	3-559-402-00	SPRING, TENSION
331	3-563-105-00	SHEET, INSULATING, MOTOR PCB
332	3-570-615-00	POLY-WASHER (DIA.1.2)
333	3-570-615-11	POLY-WASHER (DIA.1.2)(t=0.4)
334	3-570-770-00	CUSHION (A), MOTOR
335	3-570-772-00	SPACER (M)
336	3-578-123-00	SPRING, COMPRESSION
337	3-578-138-01	SEAM
338	3-578-138-11	SEAM
339	3-578-242-00	WASHER
340	3-578-254-00	RING, RETAINING, E1.2
341	3-701-436-01	WASHER, 1.6
342	3-701-437-01	WASHER
343	3-703-502-11	SCREW
344	3-831-441-XX	CUSHION, CABINET UPPER
345	7-621-772-08	SCREW +B 2X3

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- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC,
UPD···: μPD···

COILS
- MMH : mH, UH : μH

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- MMH : mH, UH : μH

MECHANISM SECTION

No.	Part No.	Description
346	7-623-505-01	LUG, 2
347	7-624-101-01	RING, RETAINING E-1.2
348	7-624-102-04	STOP RING 1.5, TYPE -E
349	7-627-552-67	SCREW, PRECISION +P 1.7X4.5
350	7-627-554-27	SCREW, PRECITION 2X6 TYPE 1
351	7-627-850-07	SCREW, PRECISION +P 1.4X2
352	7-627-850-17	SCREW, PRECISION +P 1.4X2.5
353	7-627-850-27	SCREW, PRECISION +P 1.4X3
354	7-627-850-37	SCREW, PRECISION +P 1.4X1.4
355	7-627-850-47	SCREW, PRECISION +P 1.4X1.6
356	7-627-850-67	SCREW, PRECISION +P 1.4X4
357	7-671-110-01	STEEL BALL 1.2MM
358	7-688-001-01	W 2, SMALL
359	A-3120-019-A	PC BOARD (A) ASSY, CONTROL
360	A-3120-020-A	GEAR (A) ASSY, FWD (C)
361	A-3120-021-A	GEAR (A) ASSY, FRC
362	A-3130-028-A	TABLE ASSY, REEL, T
363	A-3152-019-A	LEVER ASSY, ERASING PROTECTION
364	X-3308-404-0	IDLER ASSY, FWD
365	X-3308-405-0	PULLEY ASSY, FR
366	X-3308-406-0	FLYWHEEL ASSY
367 ♦	;X-3308-411-0	CHASSIS ASSY, HEAD
368	X-3308-412-0	PINCH LEVER ASSY
369 ♦	;X-3308-413-0	BRACKET ASSY, SWITCH
370	X-3308-414-0	CLAW ASSY, T REEL
371	X-3308-418-0	CLAW ASSY, S REEL
372 ♦	;X-3308-419-0	CHASSIS ASSY, MECHANICAL

ELECTRICAL PARTS

Ref.No.	Part No.	Description
501	1-454-326-00	SOLENOID, PLUNGER
502	1-463-339-00	ADAPTOR, AC (AC-39)
503	1-548-541-31	COUNTER
504 ♦	;1-608-116-00	PC BOARD, KEY SWITCH
505 ♦	;1-608-117-00	PC BOARD, AUDIO
506 ♦	;1-608-118-00	PC BOARD, SAFETY
507 ♦	;A-3070-074-A	MOUNTED PCB, AUDIO
508	A-3120-019-A	PC BOARD (A) ASSY, CONTROL
C104	1-163-018-00	CHIP COMPONENT 0.0056MF 10% 50V
C110	1-163-056-00	CHIP COMPONENT 0.0056MF 10% 50V
C136	1-163-065-00	CHIP COMPONENT 0.001MF 50V
C137	1-163-065-00	CHIP COMPONENT 0.001MF 50V
C138	1-163-025-00	CHIP COMPONENT 0.001MF 50V
C139	1-163-001-00	CHIP COMPONENT 220PF 10% 50V
C140	1-163-065-00	CHIP COMPONENT 0.001MF 50V
C146	1-163-065-00	CHIP COMPONENT 0.001MF 50V
C148	1-163-056-00	CHIP COMPONENT 0.0056MF 10% 50V
C801	1-163-038-00	CHIP COMPONENT 0.1MF 25V
C802	1-163-038-00	CHIP COMPONENT 0.1MF 25V
C901	1-161-007-00	CAP, CERAMIC 0.0033MF
C902	1-161-007-00	CAP, CERAMIC 0.0033MF
D101	8-719-900-24	DIODE SLP24B
D102	8-719-815-55	DIODE 1S1555
D103	8-719-815-55	DIODE 1S1555
D104	8-719-815-55	DIODE 1S1555
D105	8-719-815-55	DIODE 1S1555
D106	8-719-815-55	DIODE 1S1555
HE	8-825-542-10	HEAD, REC/PB
HRP901	8-829-336-30	HEAD PP134-36L, ERASE
IC101	8-759-608-07	IC CX-807
IC901	1-464-203-13	CIRCUIT UNIT, SYSTEM CONTROL(1)
J101	1-507-668-11	JACK, 3-GANG
J102	1-507-723-00	JACK, EXTENTION POWER
M801	8-835-067-01	MOTOR, DC (DNR-5300A)
M802	8-835-067-01	MOTOR, DC (DNR-5300A)
M901	8-835-076-01	MOTOR, DC (DNE-5700A)
MIC901	8-814-189-00	MICROPHONE, BUILT-IN (C-1007A)
PH101	8-719-751-42	DIODE NJL5141E-AC
Q101	8-729-853-63	TRANSISTOR 2SC536SP
Q102	8-729-204-82	TRANSISTOR 2SA1048-Y
Q103	8-729-853-63	TRANSISTOR 2SC536SP

ELECTRICAL PARTS

Ref.No.	Part No.	Description
Q104	8-729-853-63	TRANSISTOR 2SC536SP
Q105	8-729-853-63	TRANSISTOR 2SC536SP
Q106	8-760-523-10	TRANSISTOR 2SA772-23
Q107	8-729-612-77	TRANSISTOR 2SA1027R
Q108	8-729-853-63	TRANSISTOR 2SC536SP
Q109	8-729-245-83	TRANSISTOR 2SC2458
Q110	8-729-204-82	TRANSISTOR 2SA1048-Y
Q111	8-729-245-83	TRANSISTOR 2SC2458
R101	1-247-823-00	CARBON 470 5% 1/6W
R102	1-247-827-00	CARBON 680 5% 1/6W
R103	1-247-823-00	CARBON 470 5% 1/6W
R104	1-247-855-00	CARBON 10K 5% 1/6W
R105	1-247-805-00	CARBON 82 5% 1/6W
R106	1-247-815-00	CARBON 220 5% 1/6W
R107	1-247-903-00	CARBON 1M 5% 1/6W
R108	1-247-839-00	CARBON 2.2K 5% 1/6W
R109	1-247-843-00	CARBON 3.3K 5% 1/6W
R110	1-247-893-00	CARBON 390K 5% 1/6W
R111	1-247-835-00	CARBON 1.5K 5% 1/6W
R112	1-247-831-00	CARBON 1K 5% 1/6W
R113	1-247-879-00	CARBON 100K 5% 1/6W
R114	1-247-837-00	CARBON 1.8K 5% 1/6W
R115	1-247-831-00	CARBON 1K 5% 1/6W
R118	1-247-879-00	CARBON 100K 5% 1/6W
R119	1-247-804-00	CARBON 75 1/6W
R120	1-247-807-00	CARBON 100 5% 1/6W
R121	1-247-849-00	CARBON 5.6K 5% 1/6W
R122	1-247-855-00	CARBON 10K 5% 1/6W
R123	1-247-799-00	CARBON 47 5% 1/6W
R124	1-247-805-00	CARBON 82 5% 1/6W
R125	1-247-855-00	CARBON 10K 5% 1/6W
R126	1-247-841-00	CARBON 2.7K 5% 1/6W
R129	1-214-571-00	METAL 3.9K 1% 1/8W
R130	1-214-559-00	METAL 1.2K 1% 1/8W
R131	1-247-839-00	CARBON 2.2K 5% 1/6W
R132	1-247-859-00	CARBON 15K 5% 1/6W
R133	1-247-871-00	CARBON 47K 5% 1/6W
R134	1-247-833-00	CARBON 1.2K 5% 1/6W
R135	1-247-871-00	CARBON 47K 5% 1/6W
R136	1-247-819-00	CARBON 330 5% 1/6W
R137	1-247-895-00	CARBON 470K 5% 1/6W
R138	1-247-811-00	CARBON 150 5% 1/6W
R139	1-247-879-00	CARBON 100K 5% 1/6W
R140	1-247-896-00	CARBON 510K 5% 1/6W
R141	1-247-767-00	CARBON 2.2 5% 1/6W
R144	1-247-876-00	CARBON 75K 5% 1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description
S101	1-554-029-00	SWITCH, SLIDE
S102	1-553-510-00	SWITCH, SLIDE
S103	1-553-510-00	SWITCH, SLIDE
S901	1-553-510-00	SWITCH, SLIDE
S902	1-553-682-00	SWITCH, LEAF
S903	1-553-682-21	SWITCH, LEAF
SP901	1-503-162-00	SPEAKER
T101	1-433-238-00	TRANSFORMER, BIAS OSCILLATOR
VR101	1-226-743-00	RES, VAR, CARBON 10K
VR102	1-228-382-00	RES, VAR, CARBON 20K

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9-950-975-11
(Including 9-950-975-92)

Sony Corporation

English
8410603-2
Printed in Japan
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TCM-7

SERVICE MANUAL

US Model
Canadian Model
AEP Model
UK Model
E Model

CORRECTION

File this supplement with the service manual.

No. 1
May, 1984

Add and correct the following parts to the parts list.

GENERAL SECTION

No.	Part No.	Description	Remarks
6	3-308-410-00	(SILVER)...KNOB, EJECT	
6	3-308-410-11	(BLACK)....KNOB, EJECT	ADDED
29	3-308-441-00	(SILVER)...PANEL	CORRECT
29	3-308-441-11	(BLACK)....PANEL	CORRECT
30	3-308-442-00	(SILVER)...STRIP, ORNAMENTAL	
30	3-308-442-11	(BLACK)....STRIP, ORNAMENTAL	ADDED
59	X-3308-420-1	(BLACK)....LID ASSY, CASSETTE	ADDED
59	X-3308-421-1	(SILVER)...LID ASSY, CASSETTE	CORRECT

MICROFILM

CASSETTE CORDER
SONY

English
84E06136-1
Printed in Japan
© 1984

9-950-975-92

Sony Corporation

TC

TCM-7

TCM-7

CASSETTE-CORDER

US Model
Canadian Model
AEP Model
UK Model
E Model

SUPPLEMENT

File this supplement with the service manual.

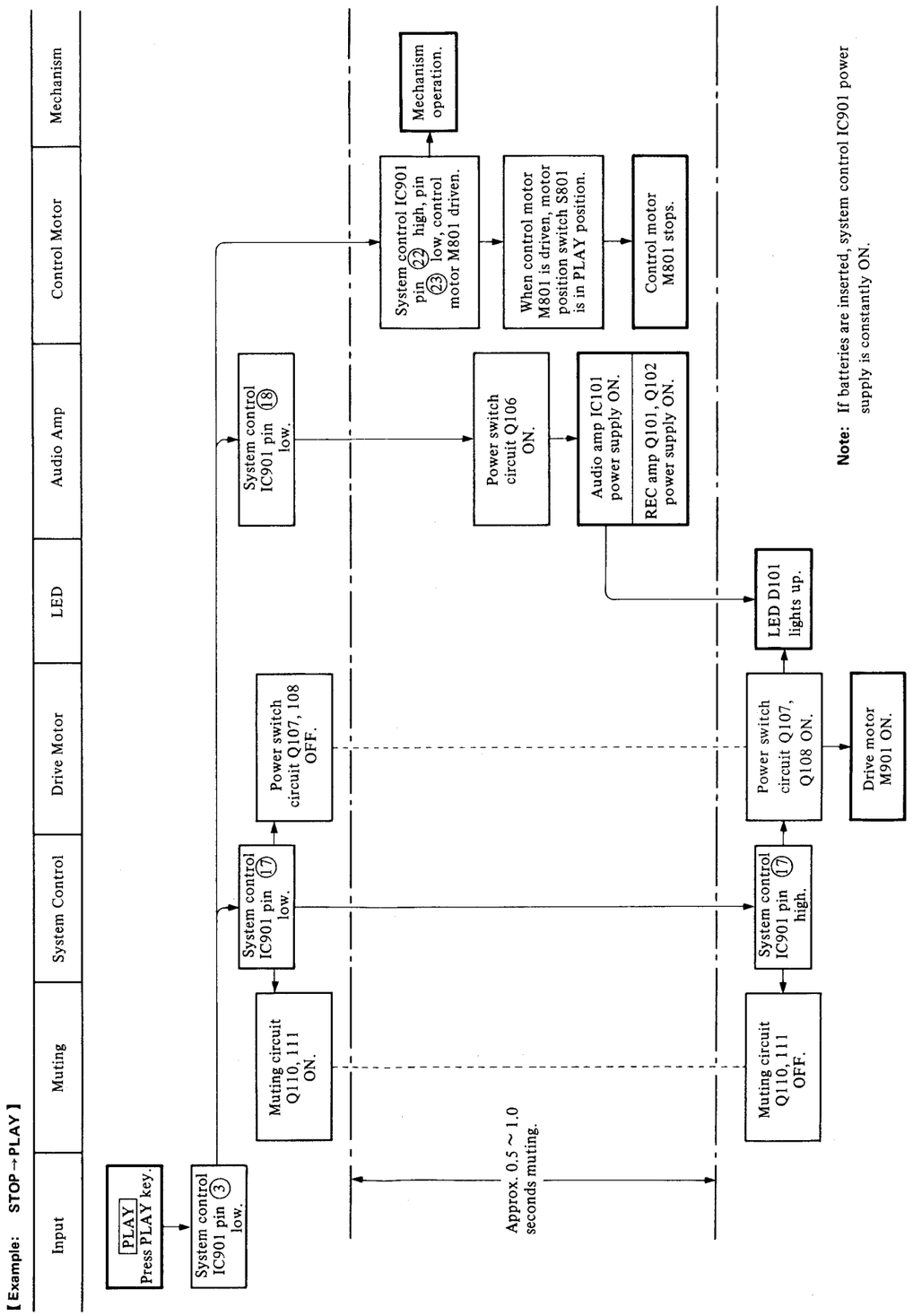
MECHANISM OPERATION

No. 1
March, 1983

SONY
SERVICE MANUAL

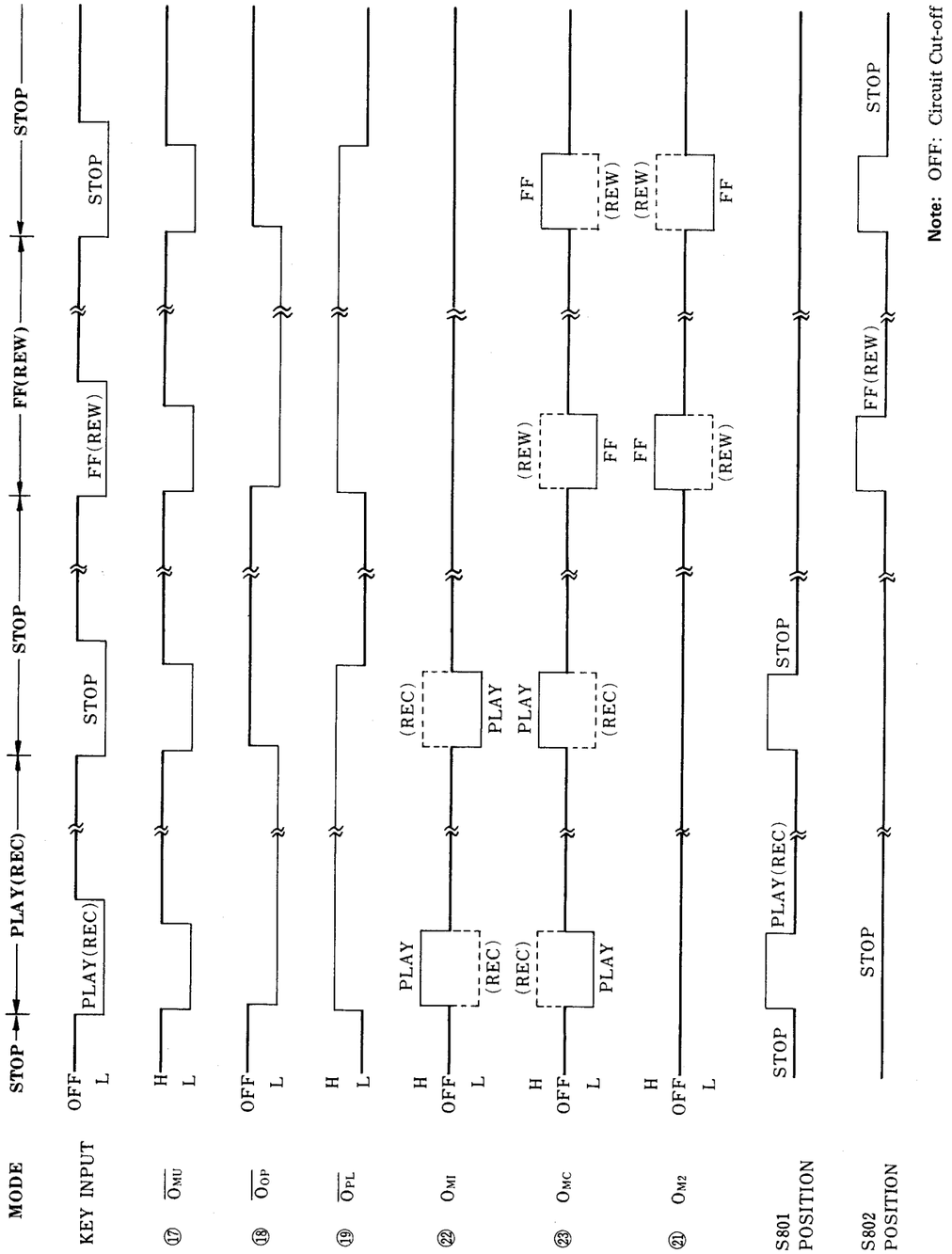
1. Operation Order

【Example: STOP→PLAY】


Mechanism
Control Motor
Audio Amp
LED
Drive Motor
System Control
Muting
Input
PLAY
Press PLAY key.
System control IC901 pin ③ low.
System control IC901 pin ⑱ low.
System control IC901 pin ⑰ low.
Muting circuit Q110, 111 ON.
Power switch circuit Q107, 108 OFF.
System control IC901 pin ㉒ high, pin ㉓ low, control motor M801 driven.
Mechanism operation.
When control motor M801 is driven, motor position switch S801 is in PLAY position.
Control motor M801 stops.
Power switch circuit Q106 ON.
Audio amp IC101 power supply ON.
REC amp Q101, Q102 power supply ON.
LED D101 lights up.
System control IC901 pin ⑰ high.
Power switch circuit Q107, Q108 ON.
Drive motor M901 ON.
Muting circuit Q110, 111 OFF.
Approx. 0.5 ~ 1.0 seconds muting.

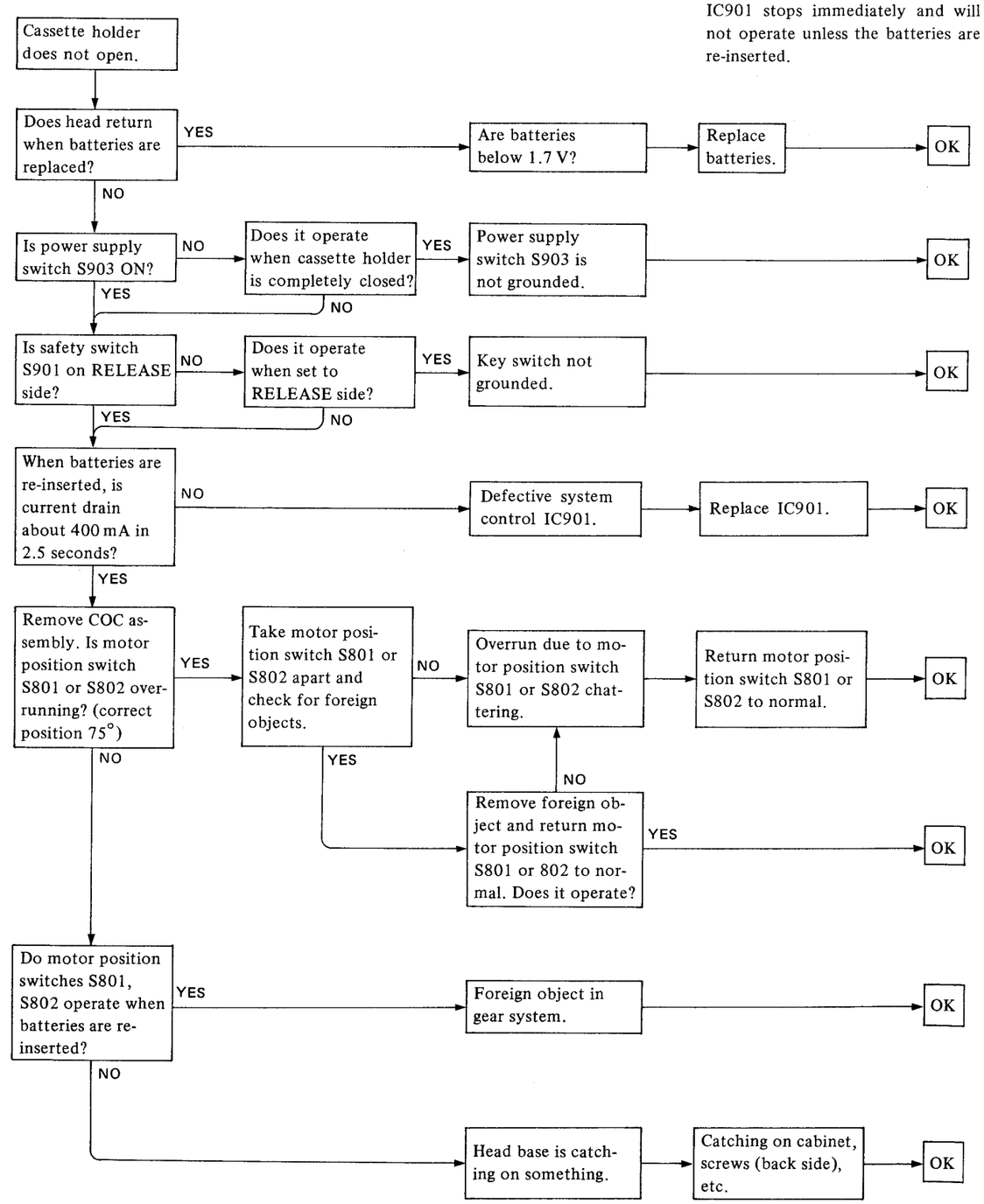
Note: If batteries are inserted, system control IC901 power supply is constantly ON.

2. System Control IC901 Timing Chart



3. Troubleshooting

Note: If the control motor is not driven within 2.5 seconds, system control IC901 stops immediately and will not operate unless the batteries are re-inserted.


Cassette holder does not open.
Does head return when batteries are replaced?
YES
Are batteries below 1.7 V?
Replace batteries.
OK
NO
Is power supply switch S903 ON?
NO
Does it operate when cassette holder is completely closed?
YES
Power supply switch S903 is not grounded.
OK
YES
NO
Is safety switch S901 on RELEASE side?
NO
Does it operate when set to RELEASE side?
YES
Key switch not grounded.
OK
YES
NO
When batteries are re-inserted, is current drain about 400 mA in 2.5 seconds?
NO
Defective system control IC901.
Replace IC901.
OK
YES
Remove COC assembly. Is motor position switch S801 or S802 overrunning? (correct position 75°)
YES
Take motor position switch S801 or S802 apart and check for foreign objects.
NO
Overrun due to motor position switch S801 or S802 chattering.
Return motor position switch S801 or S802 to normal.
OK
NO
YES
NO
Remove foreign object and return motor position switch S801 or 802 to normal. Does it operate?
YES
OK
Do motor position switches S801, S802 operate when batteries are reinserted?
YES
Foreign object in gear system.
OK
NO
Head base is catching on something.
Catching on cabinet, screws (back side), etc.
OK

4. System Control IC901 Function Description

Pin No.	I/O	Symbol	Signal Name	Function	Termination
1	–	V_{CC2}	power supply 2	Logic IC_1 power supply, connected to pin 25 V_{CC1} inside module.	–
2	input	$\overline{REC}$	record	REC mode at low level.	PU
3	input	$\overline{FWD}$	forward	FWD mode at low level.	PU
4	input	$\overline{STOP}$	stop	STOP mode at low level.	PU
5	input	$\overline{FF}$	FF	FF mode at low level. CUE during FWD.	PU
6	input	$\overline{REW}$	rewind	REW mode at low level. REVIEW during FWD.	PU
7					
8	input	$\overline{A}$	position A	Indicates control motor M801 stop position in FWD, STOP, REC modes. Position detection input.	PU
9	input	$\overline{B}$	position B		
10	input	$\overline{C}$	position C		
11	input	$\overline{D}$	position D	Indicates control motor M802 stop position in FF, STOP, REW modes. Position detection input.	PU
12	input	$\overline{E}$	position E		
13					
14					
15	–	GND_1	ground 1	Groud for logic IC_1 and voltage regulator IC_3, connected to pin 16 inside module.	–
16	–	GND_2	ground 2	Ground for driver IC_2, connected to pin 15 inside module.	–
17	output	$\overline{O_{MU}}$	muting output	ON output when control motor M801 or M802 operated.	PU
18	output	$\overline{O_{OP}}$	operation output	ON output except during STOP mode.	OC
19	output	$\overline{O_{PL}}$	plunger output	ON output in CUE or REVIEW mode.	OC
20					
21	output	O_{M2}	motor output 2	Output to rotate control motor M802. High for FF, low for REW.	PP
22	output	O_{M1}	motor output 1	Output to rotate control motor M801. High for FWD, low for REC.	PP
23	output	O_{MC}	motor common output	Output to rotate control motors M801, M802. Low for F, high for R.	PP
24					
25	–	V_{CC1}	power supply 1	Power supply for voltage regulator IC_3. Connected to pin 1 V_{CC2} inside module.	–

*Termination Symbols PU: pull-up PP: push-pull
OC: open collector

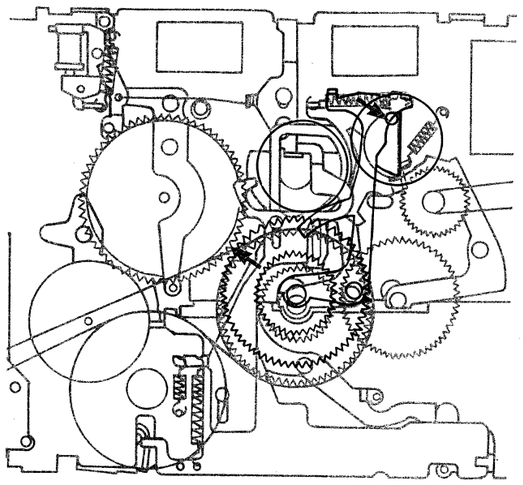
*Logic $IC_{1,2,3}$ are ICs inside system control IC901.

MEMO

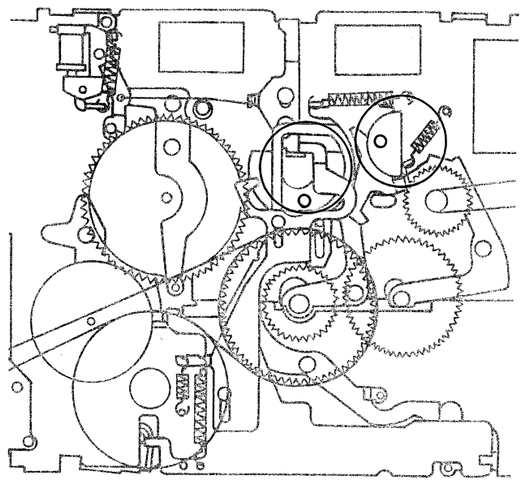
5. Mechanism Operation

Note: Black: STOP mode
Red: Mechanism position for each mode operation
Blue: Control board ass'y for each mode operation

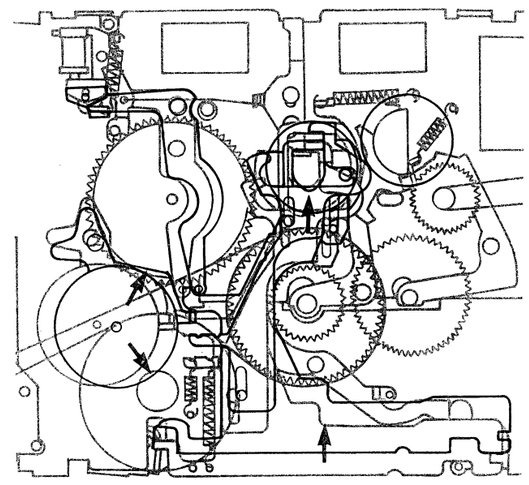
FF Operation



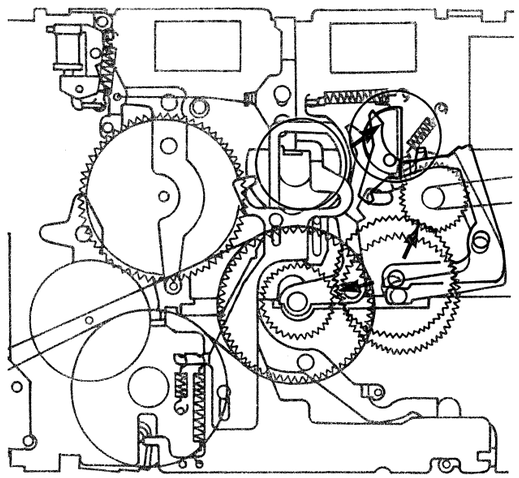
STOP



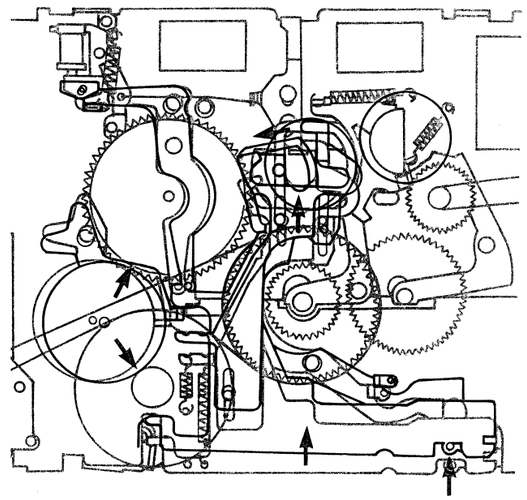
PLAY Operation



REW Operation



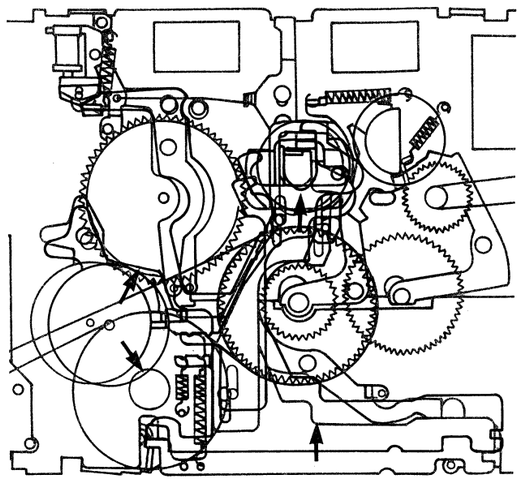
REC Operation



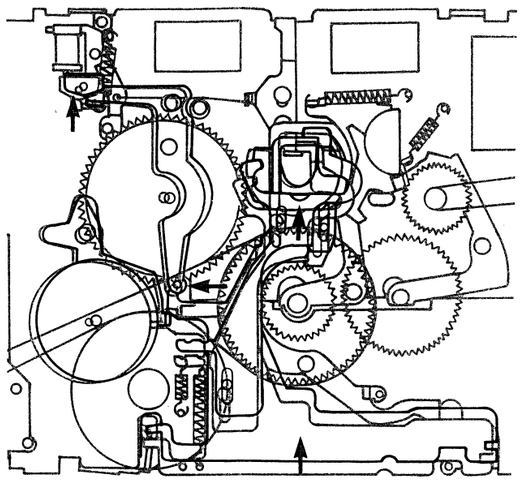
Supl

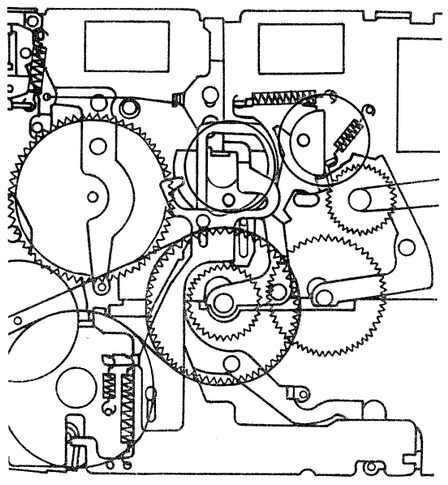
Note: Black: STOP mode
Red: Mechanism position for each mode operation
Blue: Control board ass'y for each mode operation

PLAY Operation

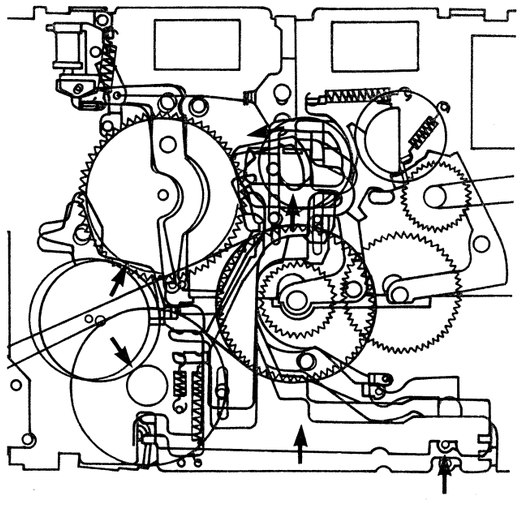


CUE Operation

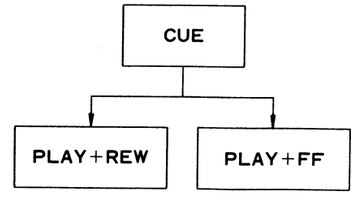




REC Operation

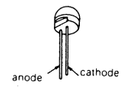


Note: For REW or FF CUE, PLAY and the respective diagrams for REW and FF are added to the CUE diagram.



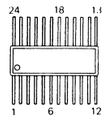
● Semiconductor Lead Layouts

SLP24B



1S1555

CX807

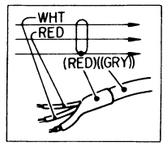


2SA1048-Y
2SC536SP
2SC2458-Y

2SA772-23

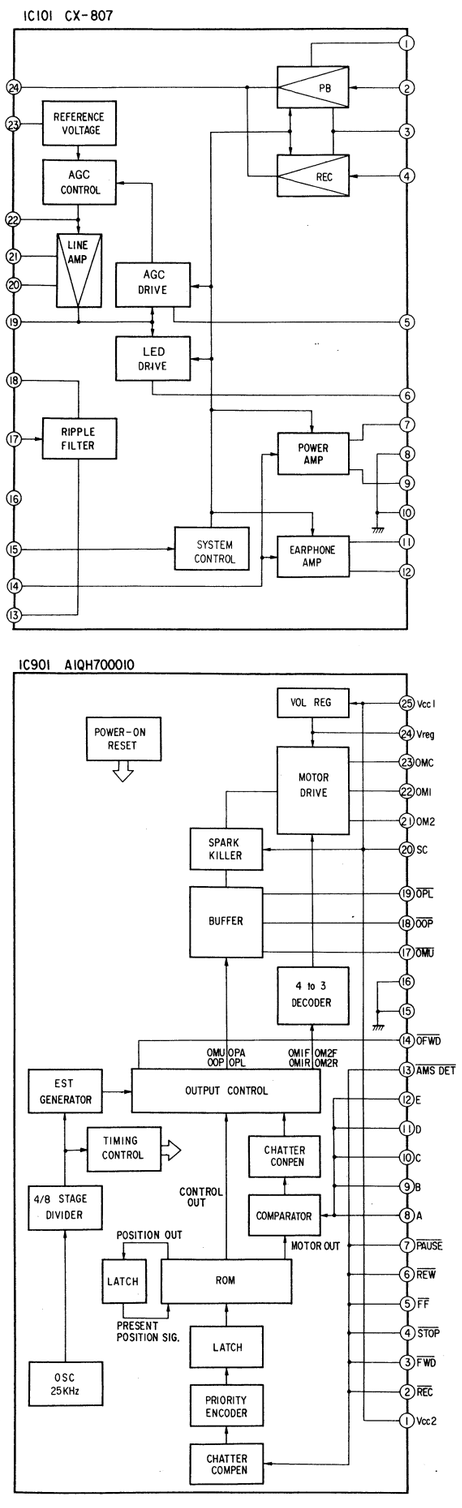
Note:

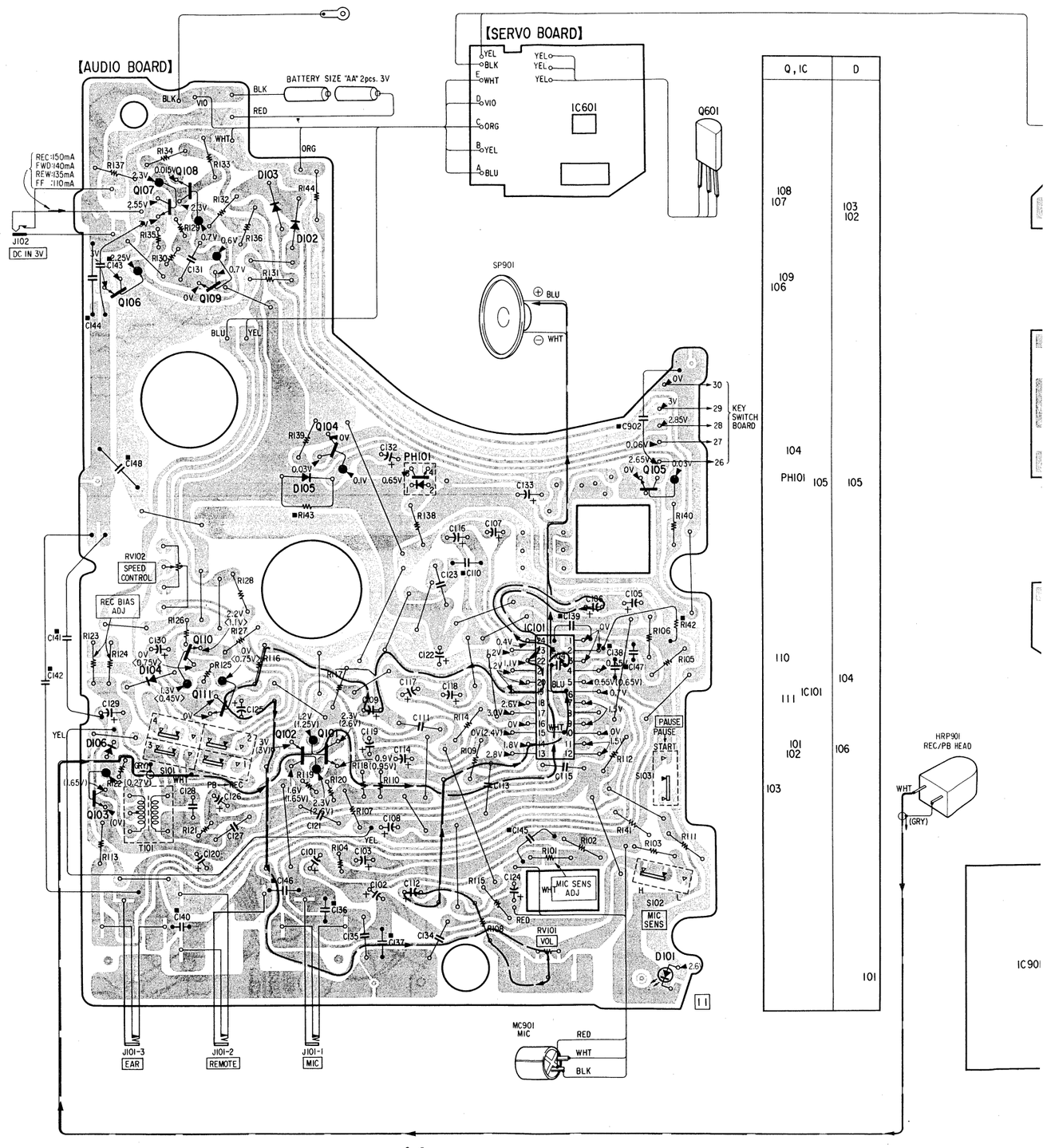
- Color code of sleeving over the end of the jacket.



- ○— : parts extracted from the component side.
- ●— : parts extracted from the conductor side.
- ■ : part mounted on the conductor side.
- ▒ : B+ pattern
- ●▬▶ : signal path
- ●▬·▶ : L-CH signal path
- ●▬··▶ : R-CH signal path

6. MOUNTING DIAGRAM — *Conductor Side* —





Sup1

TCM-7 TCM-7

E F G H I J K L M N O P Q R S T

【AUDIO BOARD】

【SERVO BOARD】

【CONTROL BOARD】

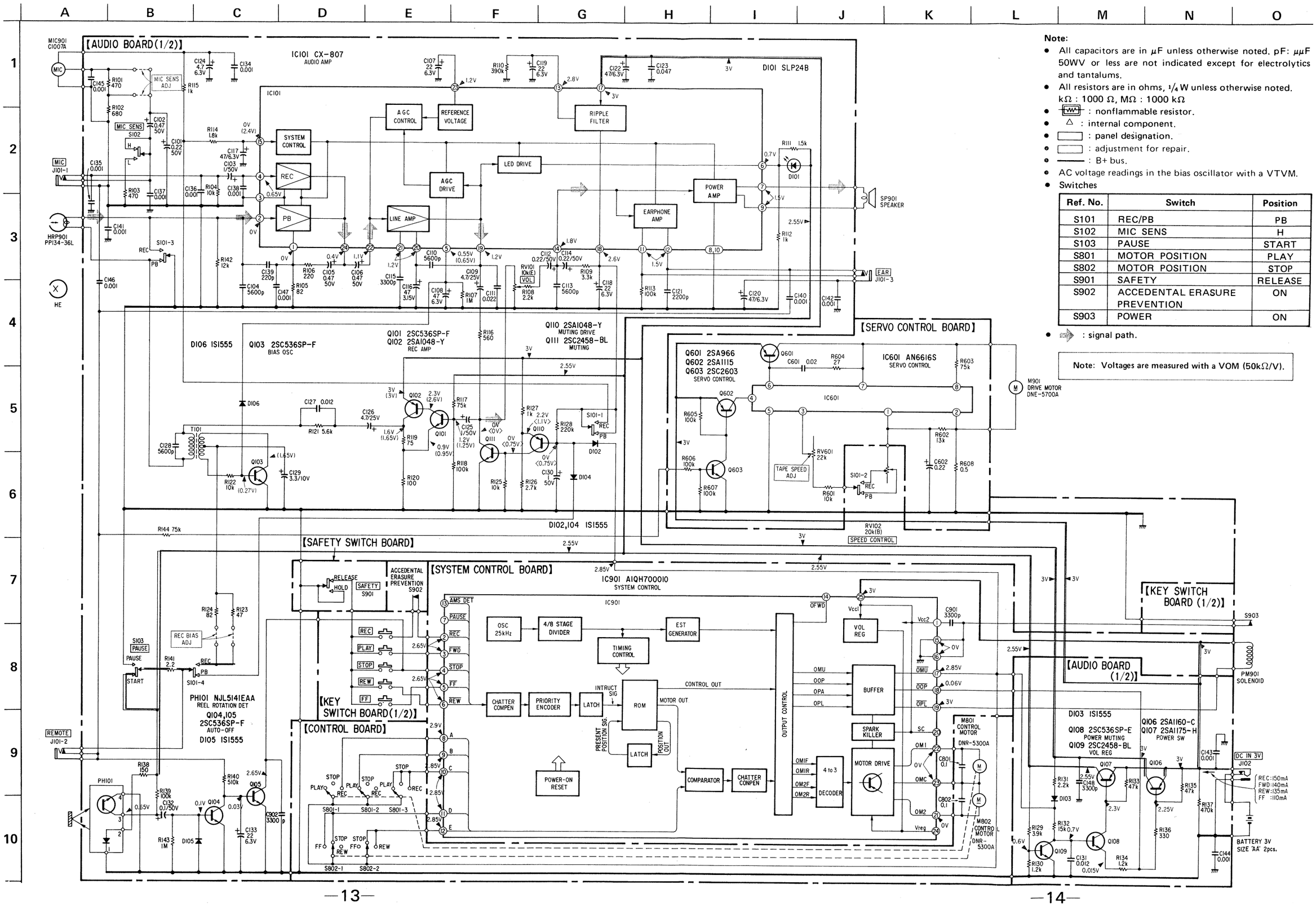
【SAFETY SWITCH BOARD】

【KEY SWITCH BOARD】

【SYSTEM CONTROL BOARD】

Q, IC	D
108	103
107	102
109	
106	
104	
PH101 105	105
110	
111 IC101	104
101	106
102	
103	
	101

7. SCHEMATIC DIAGRAM



Note:

- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/4 W unless otherwise noted. kΩ : 1000 Ω, MΩ : 1000 kΩ
- ⧈ : nonflammable resistor.
- △ : internal component.
- ▭ : panel designation.
- ▭ : adjustment for repair.
- ——— : B+ bus.
- AC voltage readings in the bias oscillator with a VTVM.
- Switches

Ref. No.	Switch	Position
S101	REC/PB	PB
S102	MIC SENS	H
S103	PAUSE	START
S801	MOTOR POSITION	PLAY
S802	MOTOR POSITION	STOP
S901	SAFETY	RELEASE
S902	ACCEDENTAL ERASURE PREVENTION	ON
S903	POWER	ON

- ⇨ : signal path.

Note: Voltages are measured with a VOM (50kΩ/V).